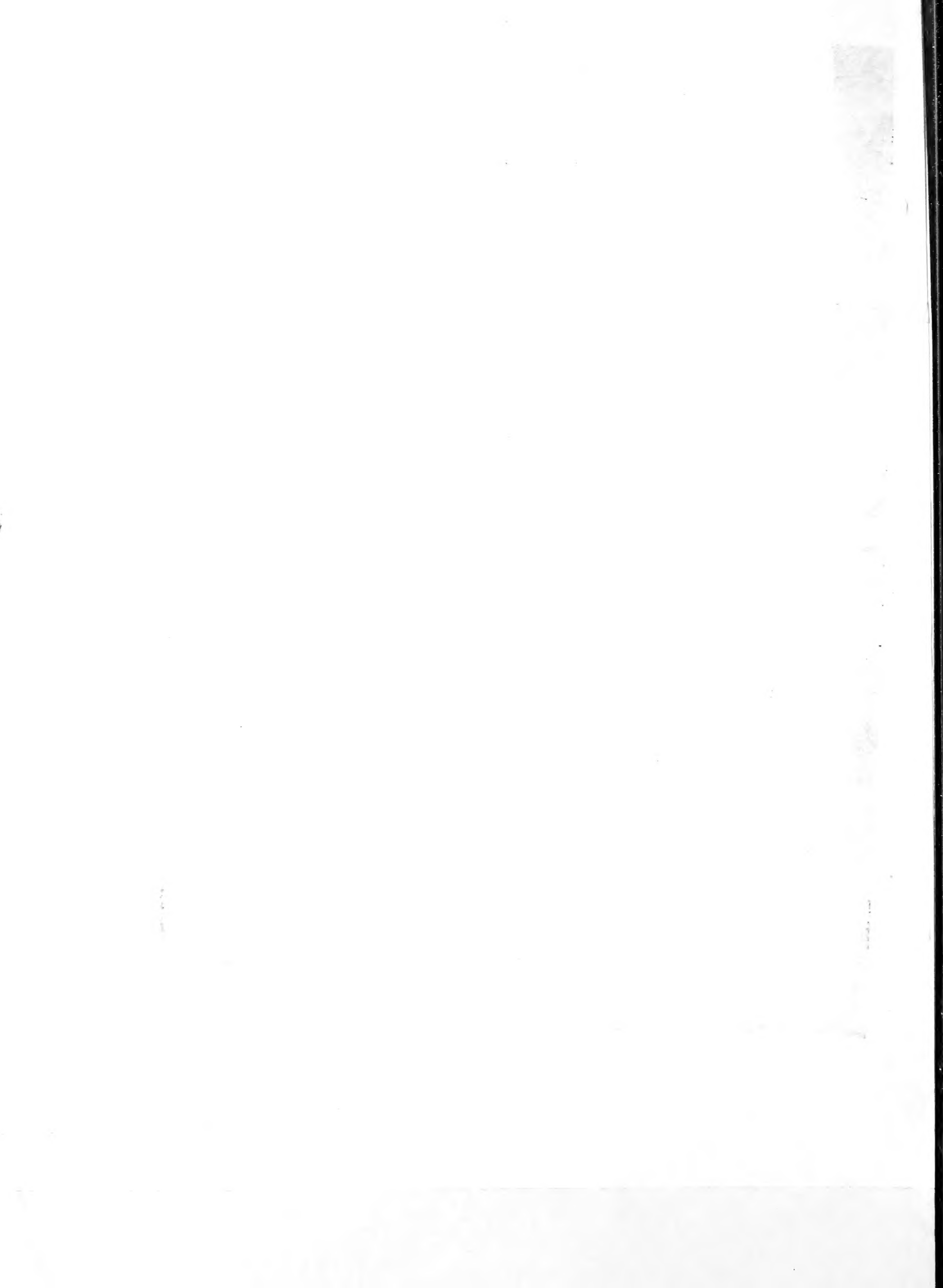


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Projected Developments of the Timber Economy of the Columbia - North Pacific Region

by
Brian R. Wall



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Cover photo: The Diamond National Corp. sawmill at Albeni Falls, Idaho, on the Pend Oreille River behind Albeni Falls Dam. This mill produces about 60 million board feet of lumber each year. Just upriver lies the Idaho-Washington boundary.

SUMMARY

The forest industries of the Columbia-North Pacific Region have been developing for more than a century. Today, they are a major component of the Region's economy, and their products are distributed throughout the Nation and the world. The projections indicate the forest economy will continue to be a significant element of the regional economy for many years. The forest industries will necessarily consume increasing amounts of second-growth roundwood during these years. The future levels of timber harvest, which would be required by the projected industrial development, are based on the assumption that forest-land owners, both public and private, would continue to increase their investments in forestry.

The mix of forest industries is projected to change over time, resulting in decreasing wood consumption by the lumber industry and increasing wood consumption by veneer, plywood, and pulp and paper industries. Forest industrial employment will decline as worker productivity increases. Payrolls in the forest industries will increase, reflecting gains in productivity and continuing demands for skilled labor.



The future forest economy will depend on young timber stands such as this one in Lane County, Oregon.

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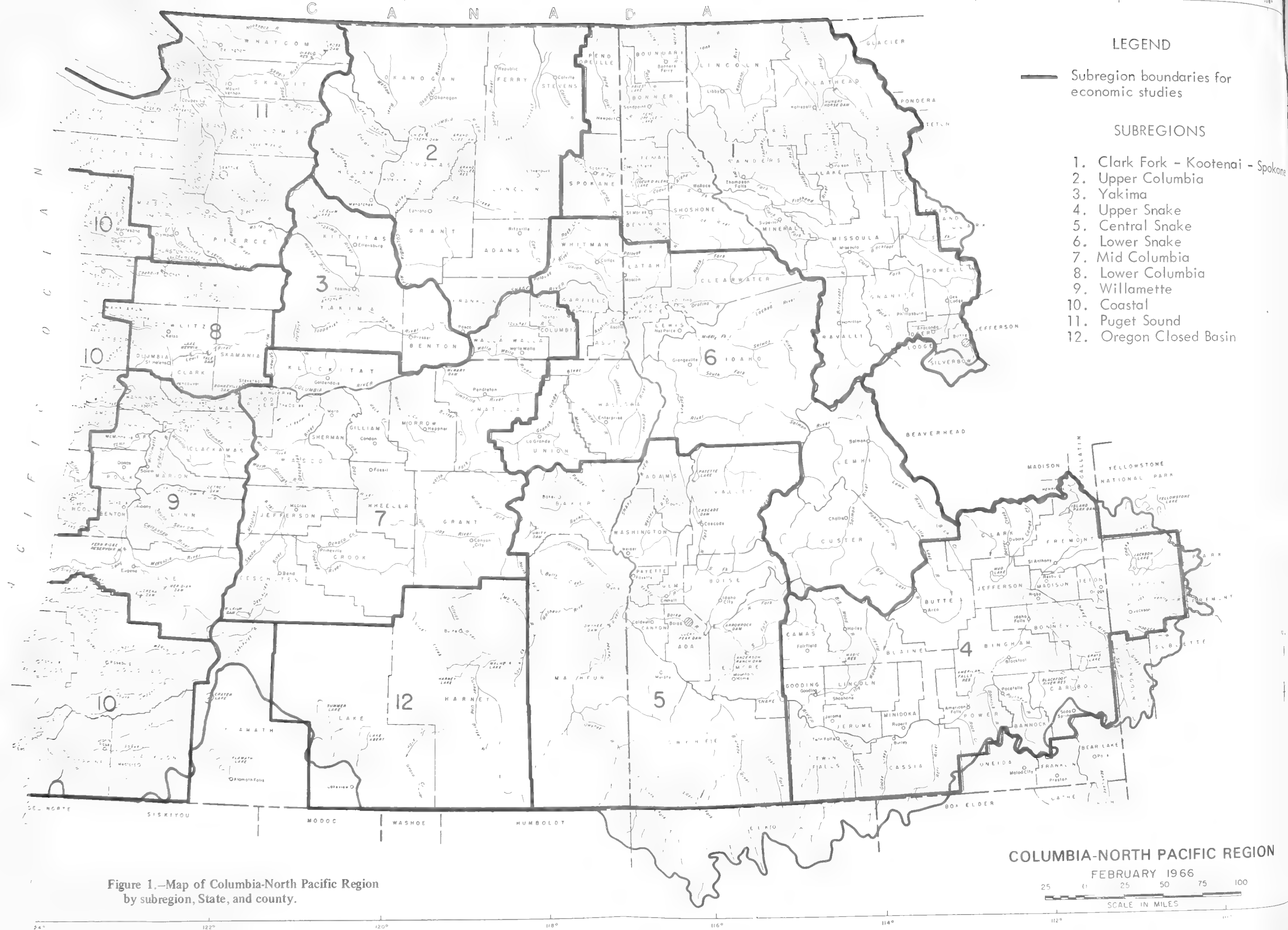
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INTRODUCTION

This report has been prepared by the Pacific Northwest Forest and Range Experiment Station as part of the contribution by the Forest Service, U.S. Department of Agriculture, to comprehensive river basin planning by the Water Resources Council and cooperating agencies.

The report contains data on the timber resource and forest industries, and it presents projections of wood consumption and forest-based employment and payrolls in the Columbia-North Pacific Region (C-NP Region) to the year 2020. These projections are based on the local timber supplies and projections of national demand for timber products. Current and projected estimates are presented for the 12 individual subregions and for the entire Region.

Figure 1 shows the Columbia-North Pacific Region divided into the 12 subregions established for economic studies. These subregions conform generally to hydrologic land-use boundaries, except that they are identified by county rather than watershed boundaries.

Much of the background for this report has come from four recent studies. The national perspective was supplied by "Timber Trends in the United States" (U.S.D.A. Forest Service 1965).¹ The regional background and projection methodology came, in part, from a report titled "Prospective Economic Developments Based on the Timber Resources of the Pacific Northwest" (Gedney et al. 1966) and prepared by the Forest Service for the Bonneville Power Administration. The

preparation of two other reports on river basin development, "Prospective Timber Supplies and Forest Industrial Development in the Willamette River Basin" and "Prospective Timber Supplies and Forest Industrial Development in the Puget Sound Basin and Adjacent Waters,"² provided experience and methodology in analyzing the forest economy on the subregional level. These last three reports were prepared by the Pacific Northwest Forest and Range Experiment Station.

The resource statistics developed for the Columbia-North Pacific Region in this report differ from those in the previous reports because new and updated inventory data have become available, new trends in timber demand have become apparent, and revised cutting budgets have been developed by public agencies. In addition, some differences arise from the fact that the boundary definitions of the Region and subregions differ slightly from previous reports. The forest inventory data presented here for Oregon and Washington have been prepared by the Forest Survey Project of the Pacific Northwest Forest and Range Experiment Station. The Forest Survey Project of the Intermountain Forest and Range Experiment Station has prepared the inventory statistics for Idaho, western Montana, and Wyoming. The statistics meet the Forest Survey standards of accuracy.

²Wall, Brian R. Prospective timber supplies and forest industrial development in the Willamette River Basin. 1965. (Unpublished Pacific Northwest Forest & Range Exp. Sta. U.S.D.A. Forest Serv. Admin. Rep., 69 pp., illus.)

Wall, Brian R. Prospective timber supplies and forest industrial development in the Willamette River Basin (supplemental projections of forest industry employment and roundwood consumption — 1963-2020). 1966. (Unpublished Pacific Northwest Forest & Range Exp. Sta. U.S.D.A. Forest Serv. Admin. Rep., 9 pp.)

¹Names and dates in parentheses refer to References, p. 39

THE PRESENT FOREST RESOURCE

The Columbia-North Pacific Region has a land area of 169 million acres, 7 percent of the total land area of the United States. It contains 85 million acres of forest land, 11 percent of the Nation's total, and 70 million acres of commercial forest land, 14 percent of the national total. Of the 15 million acres of noncommercial forest land in the Columbia-North Pacific Region, 5 million acres are of commercial character but in areas reserved for use as National Parks;³ wild, wilderness, and primitive

areas; and State, county, and municipal parks. The remaining 10 million acres of noncommercial forest land are unsuitable for raising commercial timber crops because of their low productivity due to factors such as high altitude, low rainfall, and steep terrain (table 1).

The forests of the Columbia-North Pacific Region are divided into three broad areas on the basis of differing physiographic and climatic conditions: the Douglas-fir region, the ponderosa pine region, and the northern Rocky Mountain region.

The Douglas-fir region of the C-NP Region includes all of western Washington

³Does not include changes in National Parks, wilderness areas, etc., created since January 1, 1966.

Table 1.—Land area in the Columbia-North Pacific Region and the United States, by major class of land

Type of land	Columbia-North Pacific Region, January 1, 1966		United States ¹
	<i>Thousand acres</i>	<i>Percent of U.S. total</i>	<i>Thousand acres</i>
Commercial forest land	70,248	14	508,845 ²
Noncommercial forest land:			
Productive reserved	4,603	29	16,008
Unproductive	10,211	4	234,012
Total	14,814	6	250,020
Total forest land	85,062	11	758,865
Total nonforest land	84,284	6	1,512,478
Total land area	169,346	7	2,271,343

¹From "Timber Trends in the United States," January 1, 1963 (U.S.D.A. Forest Service 1965).

²Not included are the approximate 320,000 acres of forest land in Puerto Rico and some parts of interior Alaska for which data are not yet available.

and western Oregon. On the west, it is bounded by the Pacific Ocean and on the east by the summit of the Cascade Range. Here, climatic conditions are very favorable to conifer forest growth, and, as a result, the region is characterized by its dense stands of tall trees. Douglas-fir is the dominant tree species except for spruce and hemlock in the more humid areas along the coast and true firs at the higher elevations of the Cascade Range.

The ponderosa pine region lies east of the Cascade Range in Washington and Oregon. Here, the climate is much drier than in the Douglas-fir region. There are two timberlines which limit the extent of the forest-land area on the east side. As on the west side, there is a timberline associated with the severe climatic conditions at high elevations. The other timberline is associated with arid conditions, and it can be referred to as the "dry" timberline. The Cascade Range is an effective barrier to the moisture-laden westerly winds from the Pacific Ocean. As a result, extensive areas of eastern Washington and eastern Oregon have a low precipitation at lower elevations below which forests cease to grow due to the lack of moisture. The timber zone, then, lies between these two timberlines and is generally confined to the more mountainous areas where sufficient moisture and suitable climate are available to sustain forest growth.

The eastern Oregon and eastern Washington area is generally referred to as the ponderosa pine region because it is characterized by extensive stands of ponderosa pine which occur at low elevations above the "dry" timberline. At higher elevations, the pure stands of pine give way to mixed stands of Douglas-fir, western larch, white fir, and lodgepole pine. In the cool moist areas of higher elevations, noble fir, Engelmann spruce, subalpine fir, western hemlock, and white pine are found.

The third major part of the Columbia-North Pacific Region lies to the east in Idaho, western Montana, and Teton County, Wyoming. Like the ponderosa pine

region, this portion has extensive semiarid nonforest areas, especially in southern Idaho which is only 30 percent forested. In the north, there are extensive forested areas stretching west from the Continental Divide in western Montana through northern Idaho into eastern Washington. From the standpoint of volume yields, timber quality, and operability, the best timber in the Rocky Mountains is found in northern Idaho and western Montana (Pissot and Hanson 1963).

Both northern Idaho and western Montana are 80 percent forested, and have large areas in Douglas-fir, ponderosa pine, lodgepole pine, and fir-spruce type. Northern Idaho, in addition, has a substantial acreage of western white pine type and western Montana a large area of western larch type. Although the northern subregions in this area have a history of severe forest fires which have left substantial areas of nonstocked and poorly stocked lands, undoubtedly the greatest stocking problem in the forests of this area is overstocking. Both understocked and overstocked conditions will reduce yields in the foreseeable future.

Softwood species are most common

Softwood species types dominate the forests of the Columbia-North Pacific Region, accounting for 92 percent of the commercial forest area (table 26, page 47). The most common softwood species type is Douglas-fir, which covers 26.8 million acres of commercial forest land and is found in every subregion (table 27, page 48).

The ponderosa pine type covers the second largest area of commercial forest land in the C-NP Region. Like Douglas-fir, it occurs in every subregion, but its importance is negligible in western Oregon and western Washington.

The fir-spruce forest type is composed of several associated forest species: Engelmann spruce, grand fir, subalpine fir, and other true firs. As a group, these species

cover 8.5 million acres of commercial forest land in the region, but they are most significant in the Idaho-western Montana area (table 27, page 48). These species are grouped because they frequently occur in mixture and are utilized similarly for lumber and pulpwood.

Lodgepole pine is found in every subregion of the C-NP Region. It is the predominant species on 7.5 million acres of commercial forest land, but its utilization has been largely limited to the inland area with some lumber, poles, and piling being produced from it. For the future, it offers a vast untapped resource for uses such as pulp production.

Hardwood forest types cover only 6 percent of the commercial forest land (4.4 million acres) in the Columbia-North Pacific Region (table 26, page 47). Ninety-two percent of the hardwood area occurs west of the Cascades, where it frequently is found on the better growing sites. In many areas, hardwoods are the first tree species to enter naturally after the forest has been disturbed by fire or logging. About one-half of the hardwoods in western Oregon occur in the five southwestern counties. In the inland portion of the C-NP Region, the hardwoods are generally associated with moist valley bottoms bordering streams.

Federal ownership most important

The largest public forest holdings in the Columbia-North Pacific Region are in National Forests with 51 percent (36 million acres) of the commercial forest area (table 28, page 51). East of the Cascades, the National Forests are the dominant ownership, whereas in the subregions west of the Cascades, National Forests represent a smaller proportion of the total. As shown in the following tabulation, the proportion of total commercial forest land area in National Forest ownership ranges from 88 percent in the Upper Snake subregion to 26 percent in the Puget Sound and the Coastal

subregions in western Washington and western Oregon:

	<u>Percent</u>
Subregions east of the Cascades:	
Upper Snake	88
Central Snake	80
Oregon Closed Basin	76
Lower Snake	74
Mid-Columbia	62
Clark Fork-Kootenai-Spokane	59
Upper Columbia	42
Yakima	38
Subregions west of the Cascades:	
Willamette	40
Lower Columbia	30
Coastal	26
Puget Sound	26

The Bureau of Land Management has commercial forest land in every subregion and holds the fourth largest acreage of commercial forest land in the Columbia-North Pacific Region (table 28, page 51). It is a major timber owner in western Oregon, especially in the Coastal subregion where it has 1.6 million acres of commercial forest land under management.

Indian-owned lands, managed by the Bureau of Indian Affairs, account for 3 percent (2.4 million acres) of the commercial forest land in the C-NP Region (table 28, page 51). The Indian timber resources in the larger reservations are important to the economies of several subregions even though they lack major importance in the whole Northwest. For example, the Yakima Indian Reservation accounts for about 28 percent of the commercial forest land in the Yakima subregion. The Colville and the Spokane Indian Reservations are important to the forest economy of northeastern Washington in the Upper Columbia subregion where they account for 30 percent of the commercial forest land.

Other public agencies own 6 percent of the commercial forest land

The other public owners include the States, counties, and municipalities, and as a group they account for 4.4 million acres of commercial forest land in the Columbia-North Pacific Region (table 28, page 51). The State of Washington is the largest owner in this group with 2 million acres of commercial forest land under management, and it ranks fourth in State ownership of commercial forest land in the United States.

Thirty-four percent of the commercial forest land is held by private owners

Private owners hold 24 million acres or 34 percent of the commercial forest land in the Columbia-North Pacific Region (table 28, page 51). In the Douglas-fir region of western Oregon and western Washington, private ownership accounts for about half of the commercial forest land. Forest industrial owners manage 55 percent of the 13.2 million acres of private commercial forest land. Lumber companies are the most important industrial ownership with 4.6 million acres of commercial forest land, and pulp and paper companies rank second with 2.4 million acres. Farmers own 2.5 million acres of the commercial forest land west of the Cascade Range. Miscellaneous private owners as a group hold 3.4 million acres of commercial forest land. Many of the large owners, such as railroads, actively manage their lands for timber production. However, many of the small miscellaneous private owners in the Douglas-fir region do not actively manage their forest lands because they are not timber oriented.

In the ponderosa pine region, including Klamath County,⁴ Oregon, private owners account for 31 percent of the total commercial forest land (6.2 million acres). Farmers are the largest private owner group in this region, with 54 percent of the private ownership or 3.4 million acres. The lumber industry owns the next largest area of private commercial forest land (about 2 million acres). The industrial owners in this area own some of the finest stands of ponderosa pine in the Columbia-North Pacific Region (Pacific Northwest Forest and Range Experiment Station 1965).

In all of Idaho, including Oneida, Franklin, and Bear Lake Counties,⁵ private owners account for 20 percent of the State's commercial forest land (3.2 million acres). Industrial and other private owners (excepting farmers) manage about 60 percent of the private commercial forest land, whereas the farmers own the remainder. Private interests claimed the best timberlands, especially the white pine forests, in northern Idaho, during the late 19th century. As a result, 81 percent of the private forest land (2.6 million acres) in Idaho is found in the northern part of the State.

In western Montana, 27 percent of the commercial forest land (2.8 million acres) is privately owned. Miscellaneous private owners, including large mining interests and railroads, hold 46 percent of the private forest lands (1.3 million acres). The lumber industry is the second largest private owner in western Montana with 37 percent of the private commercial forest lands (1.0 million acres) and farmers are the smallest ownership group (471,000 acres).

⁴These ownership statistics concerning the forest resource are available only for larger areas, including Klamath County, Oregon, and Oneida, Franklin, and Bear Lake Counties, Idaho. Although these counties are not included in the C-NP Region, their inclusion does not materially affect the relations developed.

⁵Oneida, Franklin, and Bear Lake Counties are outside the boundaries of the C-NP Region in this study.

Columbia-North Pacific forest land has high productive capacity

Although the 70.2 million acres of commercial forest land in the Columbia-North Pacific Region represent only 14 percent of the Nation's commercial forest area, the Region has 43 percent (about 19 million acres) of the Nation's forest land rated as potentially most productive. These are lands which are capable of yielding 120 or more cubic feet per acre per year (table 2). These high-site lands are mostly found in the Douglas-fir region where the climate is moist and favorable for forest growth. Sixty-one percent of the Douglas-fir region's forest lands are in this productive class. In general, the eastern portion of the C-NP Region has forest lands with lower

potential productivity. Almost all of the Region's acres classed as least productive, yielding less than 50 cubic feet per acre per year, are found here. Idaho's commercial forest land is generally more productive than that in other areas east of the Cascade Range.

Within the C-NP Region there is a wide range of commercial forest land capacities. The high productivity of the forest land in western Washington and western Oregon is shown by the large concentration of timber volume on relatively few acres. The Willamette subregion, for example, contains 16 percent of the Region's sawtimber volume on only 8 percent of the commercial forest area. In contrast, the Clark Fork-Kootenai-Spokane subregion accounts for only 11 percent of the timber volume even though it has 23 percent of the commercial forest area (table 3).

Table 2.—Commercial forest land area in the Columbia-North Pacific Region and the United States, by cubic-foot yield class, January 1, 1963

Yield class ¹	Columbia-North Pacific Region ^{2 3}		United States ³	
	<u>Percent</u>	<u>MM acres</u>	<u>Percent</u>	<u>MM acres</u>
120 cubic feet or more	26	19	8	44
85–120 cubic feet	18	13	23	116
50–85 cubic feet	35	25	46	233
Less than 50 cubic feet	21	15	23	116
All classes	100	72	100	509

¹ A classification of forest land based on mean annual increment culmination of fully stocked stands of species currently occupying the area. Yields may be substantially higher under intensive management.

² All of Washington, Oregon, Idaho, and western Montana, but does not include Wyoming.

³ Source: Based on "Timber Trends in the United States" but adjusted for January 1, 1968, data for Idaho and western Montana.

*Table 3.—Area of commercial forest land and volume of sawtimber
in the Columbia-North Pacific Region, by subregion,
January 1, 1966*

Subregion	Commercial forest land		Volume ¹		Average volume per acre
	<i>M acres</i>	<i>Percent</i>	<i>MM bd. ft.</i>	<i>Percent</i>	<i>Bd. ft.</i>
Clark Fork-Kootenai- Spokane	15,737	23	115,802	11	7,359
Upper Columbia	4,881	7	37,266	3	7,635
Yakima	1,645	2	29,168	3	17,731
Upper Snake	2,225	3	15,684	2	7,049
Central Snake	3,677	5	34,498	3	9,382
Lower Snake	8,881	13	74,557	7	8,395
Mid-Columbia	5,908	8	61,964	6	10,488
Lower Columbia	3,535	5	96,571	9	27,319
Willamette	5,895	8	168,542	16	28,591
Coastal	10,213	15	260,365	25	25,493
Puget Sound	6,071	9	134,589	13	22,169
Oregon Closed Basin	1,580	2	16,709	2	10,575
Total	70,248	100	1,045,715	100	14,886

¹International 1/4-inch rule.

In most areas of the Columbia-North Pacific Region, private forest ownerships have a substantial proportion of their lands in high site areas. For example, in the Douglas-fir region, 72 percent of forest industry's and 63 percent of other private owners' forest acres are in the highest capacity class. Nearly half of the private

commercial forest land in Idaho and one quarter of that in the ponderosa pine region is capable of yielding at least 85 cubic feet per acre per year. By comparison, western Montana's private forest lands have generally low productive capacity (tables 21-24, pages 43-45).

The Columbia-North Pacific Region has one-third of the Nation's total timber

The Columbia-North Pacific Region contains an estimated net volume of 217 billion cubic feet of timber on commercial forest land in trees 5 inches and larger in diameter at breast height (d.b.h.) (table 30, page 54). This is nearly one-third of the Nation's total timber volume. Live, sound trees account for 97 percent of the Region's timber volume (210 billion cubic feet); the remaining 3 percent is in non-growing-stock material, including both sound and rotten cull trees and salvable dead trees. Eighty-one percent of the live, sound volume (171 billion cubic feet) is in sawtimber-size trees; and 19 percent, or 39 billion cubic feet, is in poletimber-size trees.

The estimate of sawtimber volume in Washington and Oregon includes trees 11.0 inches d.b.h. and larger. In Idaho and western Montana, trees are generally smaller, and smaller trees are more commonly utilized. As a consequence, the lower diameter for sawtimber trees is 9.0 inches d.b.h. The volume figures for sawtimber in this report include these two differing minimum standards.

The Columbia-North Pacific Region has 1 trillion board feet of sawtimber,⁶ of which 97 percent is in softwood species and 3 percent in hardwoods (table 31, page 56). This Region has about 41 percent of

the Nation's total sawtimber inventory and almost half of the Nation's softwood sawtimber volume.

Public owners account for 71 percent of the sawtimber volume, and the National Forests have over three-fourths of this (table 31). The remaining 29 percent of the total sawtimber inventory is in private ownership, with forest industries owning about two-thirds of it. The following tabulation shows the ownership of sawtimber in the Region:

<u>Ownership class</u>	<u>Volume</u> (MM bd. ft.)
National Forest	565,823
Other public	176,868
Total public	742,691
Private	303,024
Total, all owners	1,045,715

Four species groups make up 79 percent of the total sawtimber volume in the Region. These are Douglas-fir (44 percent), western hemlock (14 percent), the true firs (12 percent), and ponderosa and Jeffrey pines (9 percent) (table 31, page 56).

In the Columbia-North Pacific Region, about 41 percent of the sawtimber inventory is over 29 inches in diameter at breast height. The largest sawtimber is generally concentrated in western Oregon and western Washington, although the ponderosa pine region also has substantial volumes of large timber. Over the years, the average size of the sawtimber inventory has been declining with the continued harvest of the

⁶ All board-foot volumes in this report, unless otherwise stated, are expressed in terms of the International 1/4-inch rule.

old growth. New manufacturing technology in both primary and secondary manufacturing has been developing as the harvest of small-size trees has been increasing. This trend toward smaller log utilization will continue and will tend to reduce the present differences in tree size across the Region. At present, a wide differential in size of trees still exists. For instance, the proportion of the number of trees under 20 inches d.b.h. ranges from 18 percent in western Oregon to 67 percent in western Montana.

500 percent to 15 billion board feet. During the Great Depression, the Region's timber harvest declined with the drop in national demand, but during World War II production increased. In recent years, the timber harvest has continued to increase but at a slower rate. During the period 1952 through 1964, production increased from 18.4 to 21.0 billion board feet (table 5).

Columbia-North Pacific Region produces 20 percent of Nation's sawtimber growth

In 1962, the net growth of the sawtimber in the Region amounted to 11.4 billion board feet, or 20 percent of the Nation's sawtimber growth (table 4). Western Washington accounted for 43 percent of the Columbia-North Pacific Region's net annual growth, reflecting the presence of thrifty second-growth stands, good site, and favorable stocking. The net growth in other areas is lower, partly due to poorer sites and partly to a greater proportion of old-growth stands. In all areas, forest management can increase timber yields through augmented investments in more intensive forest management practices.

Log production in the Columbia-North Pacific Region continues upward

In 1869, about 218 million board feet of logs were harvested in the Columbia-North Pacific Region. By 1899, 2.5 billion board feet of timber were harvested. Between 1899 and 1929, the Region's forest economy went through its greatest period of expansion, and the timber cut supporting the industrial capacity increased about

Table 4.—Net annual growth of growing stock and sawtimber on commercial forest land in the Columbia-North Pacific Region, by State area, 1962¹

Area	Sawtimber		Growing stock	
	Total	Per acre	Total	Per acre
	<i>Million board feet²</i>	<i>Board feet²</i>	<i>Million cubic feet</i>	<i>Cubic feet</i>
Western Oregon	2,700	196	595	42
Western Washington	4,920	484	1,137	105
Eastern Oregon	955	84	279	25
Eastern Washington	997	119	304	36
Northern Idaho	707	108	169	26
Southern Idaho	505	70	114	15
Western Montana	647	62	160	15
Total	11,431	158 ³	2,758	38 ³

¹Includes all of Washington, Oregon, Idaho, and western Montana and is based on data in "Timber Trends in the United States."

²International 1/4-inch rule.

³Weighted average.

*Table 5.—Annual log production by subregion and by owner group in the Columbia-North Pacific Region
in 1952, 1956, 1962, and 1964*

(In thousand board feet, International 1/4-inch rule)

Subregion and owner group	1952	1956	1962	1964
1. Clark Fork- Kootenai-Spokane:				
National Forest	405,347	784,322	910,597	1,029,612
All other	777,289	1,050,227	791,968	852,404
Total	1,182,636	1,834,549	1,702,565	1,882,016
2. Upper Columbia:				
National Forest	101,555	132,607	231,541	253,006
All other	216,571	292,473	215,393	270,083
Total	318,126	425,080	446,934	523,089
3. Yakima:				
National Forest	49,648	53,607	128,721	137,602
All other	125,861	118,070	174,079	244,073
Total	175,509	171,677	302,800	381,675
4. Upper Snake:				
National Forest	15,403	38,551	36,844	59,694
All other	5,061	10,177	8,711	14,111
Total	20,464	48,728	45,555	73,905
5. Central Snake:				
National Forest	75,976	272,940	205,750	343,545
All other	146,379	113,784	106,843	139,245
Total	222,355	386,724	402,593	482,790
6. Lower Snake:				
National Forest	119,944	218,256	324,979	399,696
All other	623,762	837,486	610,100	605,951
Total	743,706	1,055,742	935,079	1,005,647
7. Mid-Columbia:				
National Forest	336,971	461,046	552,135	579,904
All other	561,999	680,496	403,611	421,281
Total	898,970	1,141,542	955,746	1,001,185

Table 5 continued on p. 12.

Table 5.—Annual log production by subregion and by owner group in the Columbia-North Pacific Region in 1952, 1956, 1962, and 1964—Continued
(In thousand board feet, International 1/4-inch rule)

Subregion and owner group	1952	1956	1962	1964
8. Lower Columbia:				
National Forest	191,913	305,250	589,084	564,394
All other	1,289,192	1,681,559	1,353,081	1,819,847
Total	1,481,105	1,986,809	1,933,165	2,384,241
9. Willamette:				
National Forest	669,523	843,934	1,553,650	1,519,130
All other	3,337,539	2,469,993	2,098,979	2,176,612
Total	4,007,062	3,313,927	3,652,629	3,695,742
10. Coastal:				
National Forest	526,856	690,524	1,150,271	1,421,363
All other	6,499,764	6,016,730	4,357,030	4,889,088
Total	7,026,620	6,707,254	5,507,301	6,411,451
11. Puget Sound:				
National Forest	446,470	458,177	656,004	848,402
All other	1,697,862	1,840,256	1,513,360	1,935,937
Total	2,144,332	2,298,433	2,169,364	2,784,339
12. Oregon Closed Basin:				
National Forest	96,514	125,832	153,652	231,120
All other	59,792	188,652	78,716	107,939
Total	156,306	314,484	232,368	339,059
Grand total:				
National Forest	3,036,120	4,385,046	7,574,228	7,387,568
All other	15,341,071	15,299,903	11,711,871	13,577,571
Total	18,377,191	19,684,949	18,286,099	20,965,139

THE PRESENT FOREST INDUSTRY

The lumber industry

Lumber is the Region's major forest product. Production of lumber increased greatly from the mid-1800's to 1929, declined with the Great Depression, and then recovered by the 1940's. Since 1950, lumber production has fluctuated between 12 and 15 billion board feet, and in 1965 nearly 15 billion board feet of lumber were produced by 925 sawmills (tables 6 and 7).

The Douglas-fir region is the leading lumber producing area in the Columbia-North Pacific Region, with about 8.6 billion board feet of production in 1966. Both lumber production and the number of sawmills have been declining in western Oregon and western Washington. Between 1950 and 1966, lumber production declined 14 percent, and during the 1956-64 period, the number of sawmills declined 38 percent in western Oregon and 37 percent in western Washington.

The inland sawmills, east of the Cascade Range, have been increasing their total lumber production. Their share of the C-NP Region's lumber production has increased from 25 percent in 1950 to 38 percent in 1965. Eastern Washington's lumber output has been growing more rapidly than most other areas in the Western United States; in 1950 eastern Washington had a lumber production of 668 million board feet, and by 1965 it had increased to 1.2 billion board feet. A recent study of eastern Washington showed that the number of sawmills has been declining there despite increasing lumber production (Wall et al. 1966). In 1953 there were 296 mills and by 1963 the number had dropped to only 77. It is estimated that in 1967 there were only 66 mills remaining in eastern Washington. In general, the smallest sawmills are the ones which have disappeared.

Between 1950 and 1962, lumber production increased 26 percent in eastern Oregon

but the number of sawmills dropped from 70 to 30. In the business expansion period 1961 through 1967, the number of sawmills has increased from 30 to 50 mills and lumber production has been increasing.

In Idaho and western Montana, lumber production has been generally increasing since the early 1950's, and the number of sawmills has been declining. In 1956, Idaho had 311 sawmills in operation, and by 1962 there were only 193 mills remaining. In all of Montana, there were 333 mills operating in 1956, but only 209 remained in 1962 (Wilson 1964a and 1964b). Western Montana has had the greatest growth (up 122 percent) in lumber production in the Columbia-North Pacific Region during the 1950-62 period, and production in Idaho increased the smallest amount (17 percent).

The plywood industry

The Columbia-North Pacific Region has been the leading plywood supplier in the Nation since Douglas-fir plywood was first shown as a potential product at the Lewis and Clark Exposition in 1905. This industry developed in the Puget Sound subregion and was chiefly associated with door manufacturers in its early stages. New technology in making plywood aided in making better and more acceptable products, and after World War II, the industry grew rapidly, especially in western Oregon.

In 1940, the Columbia-North Pacific Region accounted for 100 percent of the softwood plywood production in the Nation, and in 1965 it accounted for about 87 percent of the Nation's plywood production (11 billion square feet, 3/8-inch basis) (table 6). The Coastal subregion of Washington and Oregon and the Willamette subregion together have about two-thirds

*Table 6.—Total output of timber products, by product and by subregion and State,
in the Columbia-North Pacific Region, 1965*

Subregion and State	Lumber ¹	Plywood ² (3/8-inch)	Woodpulp ³	Particle- board (3/4-inch) ⁴	Miscellaneous products ⁵	Foreign log exports ⁶
	<i>M bd. ft.</i>	<i>MM sq. ft.</i>	<i>Tons</i>	<i>MM sq. ft.</i>	<i>M cu. ft.</i>	<i>M cu. ft.</i>
1. Clark Fork- Kootenai-Spokane:						
Idaho	685,788	67	—	3	3,288 ⁷	—
Montana	1,254,070	465	270,000	—	3,004 ⁷	—
Washington	168,403	—	45,232	—	2,138	—
Total	2,108,261	532	315,232	3	8,430	—
2. Upper Columbia:						
Washington	531,116	—	16,507	—	6,740	500
3. Yakima:						
Washington	260,886	125	—	—	3,310	—
4. Upper Snake:						
Idaho	48,131	—	—	—	214	—
Wyoming	2,889	—	—	—	6	—
Total	51,020	—	—	—	220 ⁷	—
5. Central Snake:						
Idaho	306,286	51	—	—	2,158 ⁷	—
Oregon	69,560	18	—	—	189	—
Total	375,846	69	—	—	2,347	—
6. Lower Snake:						
Idaho	839,795	148	251,000	—	4,519 ⁷	—
Oregon	245,283	102	—	—	665	—
Washington	2,096	—	—	—	27	—
Total	1,087,174	250	251,000	—	5,211	—
7. Mid-Columbia:						
Oregon	1,052,479	144	53,948	17	3,366	—
Washington	219,499	69	165,070	—	2,785	—
Total	1,271,978	213	219,018	17	6,151	—
8. Lower Columbia:						
Oregon	329,832	156	132,523	—	2,056	—
Washington	949,994	642	1,517,003	3	14,833	12,250
Total	1,279,826	798	1,649,526	3	16,889	12,250
9. Willamette:						
Oregon	3,165,402	3,873	634,462	132	19,736	7,617
10. Coastal:						
Oregon	2,775,783	3,679	462,067	133	17,304	25,567
Washington	432,784	254	247,607	—	6,758	45,433
Total	3,208,567	3,933	709,674	133	24,062	71,000
11. Puget Sound:						
Washington	1,435,222	1,278	1,595,581	—	22,409	58,800
12. Oregon Closed Basin:						
Oregon	181,173	10	—	—	492	—
Grand total	14,956,471	11,081	5,391,000	288	115,997	150,167

¹Based on "1964-65 Statistical Yearbook" by Western Wood Products Association (1966).

²Based on 1965 American Plywood Association softwood plywood data and forest industries hardwood plywood data.

³Estimates of woodpulp production based on preliminary wood consumption data for the West (U.S. Bureau of Census).

⁴Based on 1965 U.S. Census of Manufactures data.

⁵Pilings, poles, posts, fuelwood, ties, excelsior, shingles, bolts, etc.

⁶Based on 1965 U.S. Department of Commerce data.

⁷1964 data (Intermountain Forest and Range Experiment Station).

of the Region's plywood capacity. In recent years, Idaho and western Montana's plywood industry has been growing relative to that in Washington and Oregon. The growth of the plywood industry in California and the Southern States has reduced the Columbia-North Pacific Region's share of national plywood production.

The pulp industry

The pulp and paper industry began in the early 1880's in Oregon and moved to Washington in 1885. The Washington State pulp industry grew most rapidly through the 1920's because it had the raw materials needed for sulfite pulping. As technology changed, use of a wider range of species became possible through the sulfate pulping process. Washington attracted even more pulp industry development; in 1965 this State ranked second in woodpulp production in the Nation. The major pulp industry growth in Oregon, Idaho, and western Montana has occurred since World War II, especially in the late 1950's and early 1960's. In 1947, the Region's pulp industry produced about 2 million tons of pulp, and in 1965 it produced approximately 5.4 million tons or 16 percent of the Nation's woodpulp (table 6).

In 1965, the Lower Columbia and the Puget Sound subregions together accounted for 60 percent (3.2 million tons) of the pulp production in the Columbia-North Pacific Region. The Coastal subregion and the Willamette subregions are also major pulp producers, with 709,674 tons and 634,462 tons of production, respectively. The Clark Fork-Kootenai-Spokane subregion and the Lower Snake subregion were the largest pulp producers on the east side of the Cascades with 315,232 tons and 251,000 tons of production, respectively, in 1965. Due to favorable raw material and water supply factors, the subregions in eastern Washington, Idaho, and western Montana offer some of the best chances for new pulpmill installations in the coming decades.

The expansion of the pulping activity in the Region has been based in part on the availability of wood residues from other manufacturing processes. In 1950, roundwood accounted for 81 percent of the total wood fiber consumption by the Region's pulpmills. By 1965, however, it was estimated that 68 percent of all the wood fiber consumed was residue from sawmills, planing mills, and plywood plants. Further expansion based on available residue supplies appears to be limited in view of the near-term increasing export of chips to Japan and the long-term leveling off of mill residue production.

The particleboard industry

During the 1950's, the particleboard industry was established, based on available supplies of sawmill residues. For this reason, the industry located mostly in Oregon near large raw material supplies. In 1965, only about 51 percent of the installed particleboard capacity was used to produce 288 million square feet (3/4-inch) of particleboard (table 6).

Foreign log exports

The 1960's have been marked by a rapid rise in foreign demand for roundwood from the Columbia-North Pacific Region. In 1961, 56 million cubic feet of timber were exported from the Region, and by 1965, log exports had increased 2.7 times to 150 million cubic feet. Since 1965, the export of roundwood from the Region has continued to climb, reaching 171 million cubic feet in 1966 and 262 million cubic feet in 1967. Japan purchases most of this Region's exported roundwood, although its share of the total Region's exports has varied over time. In 1961, it took 98 percent of the total volume exported. In 1965, this decreased to 80 percent, with Canada increasing its share from 2 percent to 13 percent. In 1967, Japan (95 percent), Canada (3 percent), and South Korea (2

Table 7.—Number of plants and plant capacity, by manufacturing process

Subregion and State	Sawmills ¹		Veneer only ¹	
	Number of plants	Daily capacity	Number of plants	Annual capacity (1/8-inch basis)
		<i>Bd. ft.</i>		<i>Million sq. ft.</i>
1. Clark Fork-Kootenai-Spokane:				
Idaho	70	3,024,830	—	—
Montana	126	5,242,050	—	—
Washington	11	821,000	—	—
Total	207	9,087,880	—	—
2. Upper Columbia:				
Washington	48	2,218,500	—	—
3. Yakima:				
Washington	9	922,000	1	9
4. Upper Snake:				
Idaho	31	387,630	—	—
Wyoming	1	25,000	—	—
Total	32	412,630	—	—
5. Central Snake:				
Idaho	26	1,272,760	—	—
Oregon	5	215,000	—	—
Total	31	1,487,760	—	—
6. Lower Snake:				
Idaho	57	3,601,090	—	—
Oregon	9	705,000	—	—
Washington	1	35,000	—	—
Total	67	4,341,090	—	—
7. Mid-Columbia:				
Oregon	32	3,715,000	2	77
Washington	10	373,000	—	—
Total	42	4,452,000	2	77
8. Lower Columbia:				
Oregon	9	1,420,000	—	—
Washington	42	3,450,000	6	688
Total	51	4,870,000	6	688
9. Willamette:				
Oregon	185	12,265,000	21	3,247
10. Coastal:				
Oregon	122	11,058,000	11	2,078
Washington	16	1,335,500	1	175
Total	138	12,393,500	12	2,253
11. Puget Sound:				
Washington	110	6,260,000	3	521
12. Oregon Closed Basin:				
Oregon	5	655,000	—	—
Grand total	925	59,365,360	45	6,795

¹"Directory of Forest Products Industry" (Anonymous 1966).²"Directory of the Forest Products Industry" (Anonymous 1967).

in the Columbia-North Pacific Region, by subregion and State, 1965

Particleboard ^{2 3}		Plywood ^{1 3}		Woodpulp ⁴	
Number of plants	Annual capacity (3/4-inch basis)	Number of plants	Annual Capacity (3/8-inch basis)	Number of plants	Daily capacity
<i>Million sq. ft.</i>		<i>Million sq. ft.</i>		<i>Tons</i>	
1	8	1	72	—	—
—	—	6	510	1	700
—	—	—	—	1	137
1	8	7	582	2	837
—	—	—	—	1	50
—	—	1	132	—	—
—	—	—	—	—	—
—	—	—	—	—	—
—	—	—	—	—	—
—	—	12	48	—	—
—	—	1	18	—	—
—	—	2	66	—	—
—	—	12	140	1	650
—	—	1	108	—	—
—	—	—	—	—	—
—	—	2	248	1	650
1	33	2	146	2	230
—	—	1	70	1	500
1	33	3	216	3	730
—	—	2	153	2	565
1	7	7	691	5	4,595
1	7	9	844	7	5,160
6	257	41	3,897	11	2,705
5	260	39	3,724	5	2,970
—	—	6	351	2	750
5	260	45	4,075	7	2,720
—	—	20	1,416	14	4,833
—	—	1	80	—	—
14	565	131	11,556	46	17,685

³Plants under construction are not included.

⁴"Lockwood's Directory of Paper and Allied Trades, 1966" (Lockwood Trade Journal Co., Inc. 1966).

percent) were the major importers of the Region's roundwood (Hamilton 1968).

In 1965, the Coastal subregion of western Oregon and western Washington ranked first in foreign log exports with a total of 71 million cubic feet. The Puget Sound subregion exported the second largest roundwood volume to foreign countries — 59 million cubic feet. These exported volumes were not necessarily harvested in the subregions mentioned above.

In 1968, Congress passed a law limiting the foreign export of logs from Federal lands. The law came into being after the projections were made for this study; however, it is expected that the projections will not be significantly affected.

Forest industry employment has been declining

There has been a long-term downward trend in total forest industry employment due, in part, to increases in productivity. But this influence, which reduces employment, has been somewhat offset by changes in industry mix and the increase in further manufacturing. Employment in logging, sawmills, and planing mills has been declining since 1950 and that in miscellaneous wood manufacturing has been relatively stable. Employment in plywood plants and the pulp, paper, and allied products industry has been increasing over the past 15 years. In 1950, about 169,000 workers were employed by the forest industries of the Columbia-North Pacific Region, and in 1965, the employment level was nearly 3 percent lower at 165,789 workers. Because of the excellent business conditions in 1965 and the intensive use of plant capacity, employment levels in that year were above the long-term average.

In 1965, the State of Oregon, exclusive of Klamath County, had the largest forest industry employment in the Columbia-North Pacific Region (78,765), Washington was second (66,724), and Idaho was third (12,385). The Willamette subregion had the largest forest industry employment of any

subregion — 39,944. The Coastal subregion ranked second with 35,913 workers, and the Puget Sound subregion ranked third with 31,360 workers (table 8).

Although the manufacture of lumber provides the most employment for the Region as a whole, it leads the other major forest industries in only Idaho and western Montana. Here, employment in sawmills and planing mills (SIC 242)⁷ accounted for 7,719 and 4,740 employees, respectively, in 1965. In Washington, the pulp, paper, and allied products industry (SIC 26) was the leading employer with 19,789 workers. Sawmills and planing mills (SIC 2421) in Washington ranked second with 16,421 workers, whereas veneer and plywood plants (SIC 2432) ranked third with 10,480 workers. In all of Oregon, including Klamath County, the veneer and plywood industry (SIC 2432) was the largest single forest industry employer with 27,629 workers in 1965. Sawmills and planing mills (SIC 2421) ranked second with 25,510 employees.

The employment data are based on statistics compiled by the respective State employment agencies. Employment totals presented in the detailed table may differ slightly from official figures because, when disclosure of covered employment for individual mills was a possibility, estimates of employment were developed based on average data for the industry.

⁷Standard Industrial Classification.

Table 8.—Forest industry employment in the Columbia-North Pacific Region by industry,
and by subregion and State, 1965

(Number of persons)

Subregion and State	Logging (SIC 241)	Sawmills and planing mills (SIC 242)	Veneer, millwork, plywood, prefab- ricated structures (SIC 243)	All other (SIC 24)	Total (SIC 24)	Paper and allied products (SIC 26)	Total (All)
1. Clark Fork- Kootenai-Spokane:							
Idaho	843	2,434	299	259	3,835	—	3,835
Montana	1,488	4,740	1,296	91	7,615	300 ¹	7,915
Washington	115	962	499	104	1,680	450 ¹	2,130
Total	2,446	8,136	2,094	454	13,130	750	13,880
2. Upper Columbia:							
Washington	716	2,043	29	17	2,805	83 ¹	2,888
3. Yakima:							
Washington	402	1,039	298	60	1,799	168	1,967
4. Upper Snake:							
Idaho	73	203	34	(²)	310	70 ¹	380
Wyoming	(²)	—	—	—	(²)	—	—
Total	73	203	34	(²)	310	70	380
5. Central Snake:							
Idaho	342	1,615	494	33	2,484	—	2,484
Oregon	37	334	185	—	556	—	556
Total	379	1,949	679	33	3,040	—	3,040
6. Lower Snake:							
Idaho	1,316	3,467	7	96	4,886	800 ¹	5,686
Oregon	297	688	231	—	1,216	—	1,216
Washington	21	47	—	—	68	—	68
Total	1,634	4,202	238	96	6,170	800	6,970
7. Mid-Columbia:							
Oregon	985	3,364	1,354	240	5,943	230 ¹	6,173
Washington	384	731	193	—	1,308	430 ¹	1,738
Total	1,369	4,095	1,547	240	7,251	660	7,911

See footnotes at end of table, p. 20.

Table 8.—Forest industry employment in the Columbia-North Pacific Region by industry,
and by subregion and State, 1965—Continued

(Number of persons)

Subregion and State	Logging (SIC 241)	Sawmills and planing mills (SIC 242)	Veneer, millwork, plywood, prefab- ricated structures (SIC 243)	All other (SIC 24)	Total (SIC 24)	Paper and allied products (SIC 26)	Total (All)
8. Lower Columbia:							
Oregon	190	612	433	(²)	1,235	908	2,143
Washington	3,560	4,210	2,863	(²)	10,633	7,555	18,188
Total	3,750	4,822	3,296	(²)	11,868	8,463	20,331
9. Willamette:							
Oregon	5,626	9,866	17,140	1,933	34,565	5,379	39,944
10. Coastal:							
Oregon	5,847	7,915	12,771	(²)	26,533	995	27,528
Washington	2,909	2,454	1,764	(²)	7,127	1,258	8,385
Total	8,756	10,369	14,535	(²)	33,660	2,253	35,913
11. Puget Sound:							
Washington	4,501	7,484	8,645	885	21,515	9,845	31,360
12. Oregon Closed Basin:							
Oregon	82	1,092	31	(²)	1,205	—	1,205
State totals:							
Idaho	2,574	7,719	1,222	(²)	11,515	870 ⁴	12,385 ⁴
Montana	1,488	4,740	1,387	(²)	7,615	300	7,915
Oregon	13,064	23,871	34,318	(²)	71,253	7,512	78,765
Washington	12,608	18,970	15,357	(²)	46,935	19,789	66,724
Wyoming	(³)	—	—	—	(²)	—	(²)
Grand total	29,734	55,300	52,284	(²)	137,318	28,471 ⁴	165,789 ⁴

¹ Estimated to avoid disclosing figures for individual companies.

² Data for "All other, SIC 24" have been combined with "SIC 243" to avoid disclosure of figures for individual companies.

³ Negligible.

⁴ Totals differ from the official State totals because of modifications made in the data for several subregions to avoid disclosing figures for individual companies.

THE FUTURE FOREST ECONOMY, 1965-2020

The forest economy of the Columbia-North Pacific Region has been projected in terms of wood consumption, employment, and payrolls for the 1965-2020 period. The basic wood consumption projections were made first on a regional and half-State basis; then they were allocated to subregions on the basis of existing industry distribution. However, in some cases, such as in the pulp, paper, and allied products industry, allowance was made for new plant investment at new industrial sites in the various subregions.

The timber economy of the Columbia-North Pacific Region has been changing in several ways which differ from those foreseen several years ago in studies such as "Timber Trends in the United States" (U.S.D.A. Forest Service 1965) and "Prospective Economic Developments Based on the Timber Resources of the Pacific Northwest" (Gedney et al. 1966). For example, the demand for logs for foreign exports is much greater; eastern Oregon's projected increase in consumption of wood has not materialized; southern plywood production has captured more of the Nation's plywood market than projected; production of veneer and plywood has turned downward in western Oregon and western Washington although this industry's output has increased more in the inland portion of the Region than was projected; and public agencies have raised their annual allowable cuts in many areas of the Region. The increasing demand for all forest resources has been rapidly changing the outlook for both public and private owners concerning their timber production alternatives. Thus, for this study of the Columbia-North Pacific Region, a new look has been taken at the timber economy. As a result, the new projections of wood consumption by the forest industries differ from earlier studies such as the Willamette River Basin Report and the Puget Sound Basin and Adjacent Waters Report.⁸

Future national demand for wood products to increase

The principal markets for forest products in the Columbia-North Pacific Region are distributed over the whole Nation. It is assumed that the future production of the forest industries of the Pacific Northwest will be strongly influenced by national demand. Also, the increasing worldwide demand for wood products, especially from the Pacific Rim countries, will continue to exert strong pressure to divert raw materials produced in the Pacific Northwest away from the Nation's marketplace. As a result, more wood will be demanded in future time periods.

National trends in quantities of wood products which will be demanded have been projected in the U.S.D.A. Forest Service report (1965). The projections were based on five major factors: population, household formation, gross national product, disposable personal income, and construction activity.

Total demand for lumber in the United States is projected to increase 22 percent between 1962 and 1985, even though lumber demand per capita is expected to decline. Plywood and veneer demand should double by 1985, with the South expected to supply an increasing share of the future market. Paper and board demand per capita should continue to increase so that total demand will continue to rise throughout the projection period at historic rates. The projections indicate that the demand for minor industrial products will remain about the same, but consumption of fuelwood is expected to decline. Although the domestic forests are expected to meet most of the increase in the Nation's future demand, imports of lumber, veneer logs, and pulpwood are nevertheless expected to increase.

⁸See footnote 2.

The timber supply situation in the Columbia-North Pacific Region

The timber supply situation has been studied for each State. The relationship of the forest economy to the physical timber supply is complex, for it involves not only timber demands but the goals of the various forest-land owners. Consideration has been given to trends in log production, land use, forest growth, forest mortality, forest inventory, forest ownership, and anticipated owner goals in projections of the available timber supplies for the future. Many of these timber supply relationships have been derived from earlier studies made by the Pacific Northwest Forest and Range Experiment Station staff. Some of the projected timber supply data have been prepared especially for this study. The Intermountain Forest and Range Experiment Station in Ogden, Utah, has aided in preparing both present forest resource data and estimates of the future timber cut, growth, mortality, and forest inventory relationships for the States of Idaho, Montana, and Wyoming.

Projecting the acreage available for future timber production posed complex problems in this study. It was generally assumed that the present trends in forest land loss will continue in the C-NP Region. It was also assumed that the private forest land adjacent to Puget Sound would not have commercial harvests after 1985. On the other hand, it was assumed that logging technology will continue to improve, allowing timber harvests on forest land in the Region which cannot be logged by today's standards due to soil instability or steepness. These lands are classed as commercial forest lands in this study because they are capable of producing adequate timber yields.

Western Oregon timber cut to decline slightly

Even though western Oregon has a large part of the Nation's best forest-growing land, the future timber harvest in western Oregon will not be adequate to maintain the present level of wood consumption if present downward trends in private production continue and if present allowable cuts on the public lands are adhered to. This situation reflects the history of heavy cutting on private lands, leaving inventories of sawtimber at a low level, thus limiting the economically available supply of private timber. As evidence of this, log production from private lands has a distinct downward trend, even though prices for stumpage have been increasing.

It is assumed for the Columbia-North Pacific study that this trend toward lower private production will continue until cut and net growth come more into balance. The tendency toward higher stumpage prices and the expectation of increasing future demand for wood is assumed to be a motivating force in attracting a moderate level of continued reinvestment in private forestry, bringing these lands into a sustained level of physical production. This level will be much lower than the private timber harvest in 1965.

The public agencies in the Douglas-fir region are now evaluating alternatives in managing their own respective forest resources. They are considering their forest production alternatives in relation to projected private timber production and are studying the effect on the economy of alternative courses of cutting action. On the basis of these studies, future policy regarding timber harvests will be formulated.

It has been assumed for this study that the public agencies in western Oregon will increase their timber harvests above the 1965 levels as private production declines. The public effort will nearly stabilize the total flow of roundwood during most of

the 1970-2020 projection period at a point somewhat below the 1965 harvest. As a result of this assumption, the level of economic activity projected for western Oregon may be regarded as a high projection for it implies rather large investments by the public in forestry activities.

Western Washington timber harvest to increase

In western Washington, the period of heavy private cutting came earlier than in western Oregon. Lumbermen began cutting the private lands in the mid-1800's, and the private harvest reached its peak in the 1920's. Because this is an easily reforested area, most of the private lands regenerated quickly and now have a young, fast-growing inventory. In addition, substantial areas of old growth remain which are still being harvested. The harvest on private lands is once again moving upward stimulated by increasingly higher stumpage prices, new logging technology, and increased market acceptability of smaller timber. An increase in the harvest is projected to continue in the 1965-2020 period.

Public owners have been increasing their allowable cuts in the State of Washington. The Department of Natural Resources recently evaluated the potential of their lands and greatly raised their planned harvests based on new inventory data and an accelerated thinning program. The Bureau of Indian Affairs has accelerated the Indian timber harvests for about a 15-year period in western Washington. The Forest Service has been increasing the allowable cut, and it has been assumed for this study that further increases will take place.

Eastern Oregon harvest to increase

The production of logs in eastern Oregon has been increasing since the 1940's with most of the increase coming from the National Forests. During the past decade, the harvest from private lands has decreased.

Eastern Oregon is expected to have an increasing demand for raw materials as timber supplies become limited west of the Cascade Range. The prices for east-side timber should rise, and as a result, private land owners will eventually increase their log production. The projected increase in timber consumption in eastern Oregon is based on data in the reports of Gedney et al. (1966) and Gedney (1963).

Eastern Washington harvest to increase

Eastern Washington's forest economy has been generally growing since 1932, with more rapid growth in recent years. As in eastern Oregon, the public agencies have been supplying the increased raw material used in the past decade, with private log production data showing a slight downward trend.

Log production from public lands is projected to increase in eastern Washington during the 1965-2020 period. The projected growth of eastern Washington's forest industries will stimulate an increase in private log production. Because of the favorable net growth relationships projected for private lands, it is expected that the inventory can sustain a much higher level of harvesting activity than in the past.

Idaho and western Montana timber cut to increase

The timber economy of the Idaho and western Montana area will continue to grow during the 1965-2020 projection period, if the demands for timber products in the Nation continue to rise as projected and new logging and wood processing technology enables manufacturers to hold costs at levels allowing them to compete in the Nation's marketplace.

Idaho and western Montana have a large but underutilized forest resource. For many years, the national demand for timber was met by available timber supplies in other areas of the country, and the lower quality timber of the Rocky Mountain area was not used. The increasing demand for timber products has resulted in a trend toward intensive use of all forest lands, including even the less productive segment of the commercial forest land. In the 1960's, the forest economy in Idaho and western Montana has begun to broaden and develop. It is anticipated that as industrial growth continues, more of the less productive and presently inaccessible commercial forest land in Idaho and western Montana will be included in the timber-producing base.

The production levels established for this area are based on the projections made in the U.S.D.A. Forest Service report (1965). The projections for private lands were changed to bring future levels of cut and net growth more in line in order to sustain a vigorous timber inventory. National Forests will account for the largest part of the increase in future timber harvests in Idaho and western Montana, and it is assumed that they will make the large investments in forestry required to produce these projected timber volumes.

Roundwood consumption by lumber and wood products industry to decline

In 1965, the lumber and wood products industry (SIC 24) and foreign log exports consumed 3.5 billion cubic feet of roundwood in the Columbia-North Pacific Region (table 9). During the 1965-2020 projection period, the roundwood consumption by this group of forest-based industries will decline 11 percent, whereas the roundwood consumption by the pulp and paper industry (SIC 26) will increase.

It has been assumed in these projections that when raw material is scarce, the forest industry which adds the most value to its wood input during the manufacturing process will be better able to outbid other wood users for the resource. For example, plywood plants and log exporters have increased their shares of total timber harvest at the expense of sawmills in the Douglas-fir region. In the projections in the Columbia-North Pacific Region, it was assumed, based on present trends, that the distribution of timber harvest among its various end uses will continue to change. The degree of change will vary by sub-regions, depending on the availability of timber supply.

*Table 9.—Roundwood consumption by the lumber and wood products industry
in the Columbia-North Pacific Region by subregion and State,
1965, with projections to the year 2020¹
(In million cubic feet)*

Subregion and State	1965	1970	1980	1990	2000	2010	2020
1. Clark Fork-Kootenai-Spokane:							
Idaho	117	121	129	139	137	131	120
Montana	239	218	215	217	173	180	175
Washington	29	31	36	38	40	40	41
Total	385	370	380	394	350	351	336
2. Upper Columbia:							
Washington	92	105	125	135	143	144	150
3. Yakima:							
Washington	54	62	75	83	91	95	100
4. Upper Snake:							
Idaho	7	7	8	8	8	8	7
Wyoming	—	—	—	—	—	—	—
Total	7	7	8	8	8	8	7
5. Central Snake:							
Idaho	55	58	62	67	67	65	61
Oregon	12	12	13	14	15	15	15
Total	67	70	75	81	82	80	76
6. Lower Snake:							
Idaho	149	159	171	185	185	180	169
Oregon	46	50	56	60	63	65	66
Washington	(²)	(²)	1	1	1	1	1
Total	195	209	228	246	249	246	236
7. Mid-Columbia:							
Oregon	176	172	179	181	186	189	193
Washington	43	49	60	65	69	71	76
Total	219	221	239	246	255	260	269
8. Lower Columbia:							
Oregon	66	50	42	39	40	40	43
Washington	228	214	229	219	241	243	216
Total	294	264	271	258	281	283	259
9. Willamette:							
Oregon	836	654	580	555	575	574	606
10. Coastal:							
Oregon	775	624	559	538	548	540	564
Washington	141	175	196	179	159	140	106
Total	916	799	755	717	707	680	670
11. Puget Sound:							
Washington	406	427	472	450	457	445	385
12. Oregon Closed Basin:							
Oregon	28	28	29	29	29	29	30
State totals:							
Idaho	328	345	370	399	397	384	357
Montana	239	218	215	217	173	180	175
Oregon	1,939	1,590	1,458	1,416	1,456	1,452	1,517
Washington	993	1,063	1,194	1,170	1,201	1,179	1,075
Wyoming	—	—	—	—	—	—	—
Grand total	3,499	3,216	3,237	3,202	3,227	3,195	3,124

¹Includes foreign log exports.

²Less than 500,000 cubic feet.

Saw-log consumption to decline 29 percent by 2020

In 1965, sawmills consumed 2.3 billion cubic feet of roundwood. By the year 2020, saw-log consumption in the Columbia-North Pacific Region is projected to decline 29 percent to 1.7 billion cubic feet (table 10). This decline takes place despite the projected increase in national demand. The downward projection in the C-NP Region reflects the assumption that many of the lumber industry's historical problems will continue into the future. The lumber industry is highly competitive; there are good substitutes for lumber, and increased costs of doing business cannot easily be passed on to the consumer. In the Columbia-North Pacific Region, the costs of doing business in the lumber industry have risen, especially in the form of stumpage and labor costs. The price of the end product has been relatively stable tending to squeeze out the profits of the sawmill. In part, this may explain why so many sawmills have been going out of business in the Region. With the projected increased demands for other uses of stumpage by the plywood and the pulp industries, it is expected that the sawmill will be at a relative disadvantage in acquiring raw material, and as a result, its share of the Region's timber harvest will decline.

Veneer-log consumption to increase 40 percent by 2020

Veneer and plywood plants consumed 877 million cubic feet of roundwood in 1965 in the Columbia-North Pacific Region. The growth of the plywood industry reflects its favorable competitive position among building materials and the technological breakthroughs in peeling smaller and rougher logs economically. In the long run, it has been assumed that the plywood industry will continue to increase,

although not at its historical rate. The total consumption of veneer logs is projected to increase 40 percent to 1.2 billion cubic feet during the 1965-2020 period (table 10).

Roundwood consumption for miscellaneous wood products to increase

The estimated trend level of roundwood consumption for miscellaneous products in 1965 was 128 million cubic feet. Miscellaneous products include such products as poles, pilings, posts, fuelwood, and shingles. This roundwood consumption is projected to increase by 48 million cubic feet to 176 million cubic feet in 2020 (table 10). It is likely that the mix of miscellaneous products will change by 2020, with increasing emphasis on manufacturing in future time periods.

Foreign log exports to increase to 1980, then decline

The quantities of timber demanded by foreign countries along the Pacific Rim are expected to increase during the early part of the projection period. Experience has shown that log exporters have been effective in purchasing their timber requirements from this Region. The export of roundwood is projected to increase 2.2 times to 337 million cubic feet between 1965 and 1980 with most of the increase coming during the 1960's (table 10). Log exports are expected to decline starting in 1980 because of the increasing demand for roundwood in the United States, the increasing availability of wood from countries such as the Soviet Union, and the increasing domestic production of roundwood in Japan (Crawford 1965). By 2020, log exports are projected to amount to 57 million cubic feet which is 38 percent of the 1965 volume.

Table 10.—Roundwood consumption by the lumber and wood products industry in the Columbia-North Pacific Region, by type of use, 1965, with projections to the year 2020¹
(In million cubic feet)

Type of use	1965	1970	1980	1990	2000	2010	2020
Veneer logs	878	836	926	978	1,112	1,173	1,228
Saw logs	2,343	1,957	1,819	1,753	1,734	1,715	1,663
Miscellaneous wood products	128 ²	137	155	176	186	186	176
Foreign log exports	150	286	337	295	195	121	57
Total roundwood	3,499	3,216	3,237	3,202	3,227	3,195	3,124

¹For detail by State areas, see tables 35 through 41 in Appendix of Tables.

²The 1965 figure for miscellaneous products is a long-term trend-level point. For this reason, it differs from the 1965 miscellaneous output figure shown in table 6.

Available mill wood residue to decline

In 1965, sawmills, planing mills, veneer plants, and plywood plants in the Region produced 8.2 million tons of coarse residue, 4 million tons of sawdust, and 2.8 million tons of shavings. Calculations of potential mill residue production have been made for the Columbia-North Pacific Region based on the projected output of lumber and veneer. Because the projected decline in lumber production will more than offset the increase in veneer production, the output of mill residue will also decline. Coarse residue production is projected to decline 11 percent to 7.3 million tons by 2020; sawdust production will drop 29 percent to 2.9 million tons; and shavings production will drop 30 percent to about 2 million tons (table 11).

Pulpwood consumption to increase 1.6 times by 2020

In 1965, an estimated 839 million cubic feet of pulpwood was consumed by pulpmills in the Columbia-North Pacific Region. It was estimated that 68 percent of this total wood fiber consumption (567 million cubic feet) was residue from the lumber and wood products industry.

By the year 2020, the total wood consumption by the pulp, paper, and allied products industry is projected to increase 1.6 times to 2.2 billion cubic feet (table 12). The decreasing availability of plant residues will result in an increasing part of pulpwood production coming from roundwood. It is projected that roundwood consumption by pulpmills will increase from 272 million cubic feet in 1965 to 1.4

Table 11.—Production of mill residue in the Columbia-North Pacific Region in 1965, with projections to the year 2020¹

(In thousand tons)

Type of residue	1965	1970	1980	1990	2000	2010	2020
Coarse	8,186	7,110	6,954	6,905	7,180	7,275	7,295
Sawdust	4,065	3,407	3,166	3,052	3,015	2,974	2,899
Shavings	2,807	2,326	2,143	2,054	2,032	2,005	1,952

¹ Assumes no change in utilization of roundwood.

billion cubic feet in 2020. Roundwood will then account for 65 percent of the total pulpwood consumption rather than the present 32 percent.

Almost every subregion is assumed to share in the expansion of the pulp, paper, and allied products industry, but the Lower Columbia and Puget Sound subregions will remain the most important pulpwood-consuming areas in the Region, with 575 million cubic feet and 546 million cubic feet of wood consumption, respectively, in 2020.

Forest industry employment to decline

Projections of forest industry employment have been made for the 1965-2020 period for the Columbia-North Pacific Region. The historical relationship between employment and wood input was studied for the period 1950 to 1965 for the major forest industries in each broad region within each State, except for Idaho and western Montana where State data were generally combined. Regressions were developed for SIC 2411, logging; SIC 2421, sawmills and planing mills; SIC 2432, veneer and plywood; and SIC 26, pulp,

paper, and allied products. The historic trend in the employment-consumption relationship was projected to 2020 for each forest industry. By use of this and the predicted wood consumption by industry, future forest-based employment was calculated for the various geographic areas of the Columbia-North Pacific Region. In this text and appendix tables, the employment projections have not been rounded so that data for small geographic areas can be added and reconciled with various regional totals. This is not meant to imply that the projections are accurate to the detail shown.

Log sizes are changing, worker productivity is increasing, log utilization is improving, and the work week has been getting shorter over time. These various factors are reflected in the trend of the employment-consumption relationship even though each individual factor influences employment differently. Thus, the method of projecting employment implicitly takes into account a number of factors which have been changing and assumes that the same trends will continue.

Total forest industry employment in the Columbia-North Pacific Region is projected to decline 37 percent during the 1965-2020

*Table 12.—Wood consumption by the paper and allied products industry
in the Columbia-North Pacific Region by subregion and State, 1965,
with projections to the year 2020¹
(In million cubic feet)*

Subregion and State	1965	1970	1980	1990	2000	2010	2020
1. Clark Fork-Kootenai-Spokane:							
Idaho	—	—	—	—	—	—	—
Montana	52	84	107	130	185	192	200
Washington	7	8	8	9	9	10	12
Total	59	92	115	139	194	202	212
2. Upper Columbia:							
Washington	3	3	8	11	13	17	20
3. Yakima:							
Washington	—	—	—	—	—	—	—
4. Upper Snake:							
Idaho	—	—	—	—	12	24	35
Wyoming	—	—	—	—	—	—	—
Total	—	—	—	—	12	24	35
5. Central Snake:							
Idaho	—	—	14	36	37	48	75
Oregon	—	—	—	—	—	—	—
Total	—	—	14	36	37	48	75
6. Lower Snake:							
Idaho	48	57	58	65	66	74	75
Oregon	—	—	—	—	—	—	—
Washington	—	—	—	—	—	—	—
Total	48	57	58	65	66	74	75
7. Mid-Columbia:							
Oregon	11	15	22	40	48	51	51
Washington	27	29	29	30	33	33	38
Total	38	44	51	70	81	84	89
8. Lower Columbia:							
Oregon	20	30	42	51	54	55	56
Washington	229	242	326	442	475	508	519
Total	249	272	368	493	529	563	575
9. Willamette:							
Oregon	95	145	203	243	257	262	267
10. Coastal:							
Oregon	69	105	148	177	187	191	195
Washington	37	39	53	72	77	83	85
Total	106	144	201	249	264	274	280
11. Puget Sound:							
Washington	241	254	342	464	499	534	546
12. Oregon Closed Basin:							
Oregon	—	—	—	—	—	—	—
Grand total	839	1,011	1,360	1,770	1,952	2,082	2,174

¹ Includes hardboard industry data.

period to about 104,000 (table 13). This decline will be entirely the result of decreased employment in the lumber and wood products industry where increasing worker productivity coupled with a declining wood consumption is projected to reduce employment 46 percent during the 1965-2020 period. Total employment in the lumber and wood products industry is predicted to be 73,816 in 2020 compared with 137,318 in 1965.

Pulp, paper, and allied products employment is projected to increase 6 percent to 30,189 employees. This increase reflects the rapid growth which is anticipated for the industry.

Washington State will be leading in forest employment in 2020 with 46,932 workers; Oregon will drop to second and will have 44,012 employed in the forest industries in 2020. Idaho will have 8,657 forest industry employees in 2020, and western Montana will have 4,404 employees (tables 14 and 15).

Forest management employment to increase 1.7 times by 2020

In 1962, it was estimated that the number of persons employed in forest management in the C-NP Region amounted to 17,500. Forest management employment includes all workers both publicly or privately engaged in the protection and management of forest lands for the production of timber and related products. It also includes the time worked by part-time employees and forest owners converted to an equivalent full-time basis.⁹

The trend toward more intensive forest management on all forest lands in the Columbia-North Pacific Region will continue to the year 2020. More forest

management personnel will be needed as the multiple uses of forest lands are stressed, and it is projected that forest management employment will increase 1.7 times to 46,600 persons by the year 2020 (table 16).

Forest related payrolls to increase greatly by 2020

In 1962, worker incomes in all forest related activities amounted to \$945 million. Workers in the lumber and wood products industries received 73 percent of the total, those in pulp, paper, and allied products received 18 percent, and forest management employees received 9 percent of the total 1962 payroll in the forest economy.

Between 1962 and 2020, total payrolls in the forest economy are projected to increase 1.4 times to a total of about \$2.3 billion (1962 dollars). Payrolls are assumed to increase commensurate with worker productivity. Payrolls in the lumber and wood products industries in 2020 will amount to 34 percent of the total or \$765 million, whereas the pulp, paper, and allied products payroll will be \$537 million or 23 percent. Forest management payrolls are projected to be \$975 million in 2020 or 43 percent of the total (tables 17, 18, and 19).

⁹Based on a concept of forest management developed in "The Economic Importance of Timber in the United States" (Hair 1963).

Table 13.—Forest industry employment in the Columbia-North Pacific Region, by subregion and industry group, 1965, with projections to the year 2020^{1 2}

(Number of persons)

Subregion and industry group	Standard industrial classification code	1965	1970	1980	1990	2000	2010	2020
1. Clark Fork-Kootenai-Spokane:								
Lumber and wood products	24	13,130	12,008	12,362	9,807	8,261	7,667	7,143
Pulp and paper	26	750	856	922	917	1,140	1,153	1,161
Total		13,880	12,864	13,284	10,724	9,401	8,820	8,304
2. Upper Columbia:								
Lumber and wood products	24	2,805	3,098	3,003	2,702	2,469	2,214	2,055
Pulp and paper	26	83	88	83	80	76	75	79
Total		2,888	3,186	3,086	2,782	2,545	2,289	2,134
3. Yakima:								
Lumber and wood products	24	1,799	1,999	1,981	1,853	1,741	1,632	1,570
Pulp and paper	26	168	165	254	310	300	291	306
Total		1,967	2,164	2,235	2,163	2,041	1,923	1,876
4. Upper Snake:								
Lumber and wood products	24	310	320	297	276	240	219	200
Pulp and paper	26	70	86	76	71	227	355	454
Total		380	406	373	347	467	574	654
5. Central Snake:								
Lumber and wood products	24	3,040	3,304	3,167	2,982	2,707	2,529	2,374
Pulp and paper	26	—	—	222	513	479	570	822
Total		3,040	3,304	3,389	3,495	3,186	3,099	3,196
6. Lower Snake:								
Lumber and wood products	24	6,170	5,741	5,094	4,571	3,824	3,301	2,865
Pulp and paper	26	800	928	841	855	784	809	752
Total		6,970	6,669	5,935	5,426	4,608	4,110	3,617
7. Mid-Columbia:								
Lumber and wood products	24	7,251	6,714	6,072	5,499	5,081	4,712	4,427
Pulp and paper	26	660	865	884	1,122	1,142	1,088	1,022
Total		7,911	7,579	6,956	6,621	6,223	5,800	5,449
8. Lower Columbia:								
Lumber and wood products	24	11,868	9,774	8,560	7,406	7,012	6,167	5,694
Pulp and paper	26	8,463	8,430	9,224	10,350	9,578	8,962	8,172
Total		20,331	18,204	17,784	17,756	16,590	15,129	13,866
9. Willamette:								
Lumber and wood products	24	34,565	27,720	23,226	20,587	19,527	18,197	17,949
Pulp and paper	26	5,379	6,866	7,607	7,709	7,060	6,345	5,782
Total		39,944	34,586	30,833	28,296	26,587	24,542	23,731
10. Coastal:								
Lumber and wood products	24	33,660	27,119	22,770	19,918	18,686	16,966	16,505
Pulp and paper	26	2,253	2,505	2,756	2,959	2,728	2,510	2,288
Total		35,913	29,624	25,526	22,877	21,414	19,476	18,793
11. Puget Sound:								
Lumber and wood products	24	21,515	18,479	16,944	15,150	14,670	13,491	12,601
Pulp and paper	26	9,845	9,442	10,311	11,757	10,896	10,253	9,351
Total		31,360	27,921	27,255	26,907	25,566	23,744	21,952
12. Oregon Closed Basin:								
Lumber and wood products	24	1,205	1,027	804	662	564	490	433
Pulp and paper	26	—	—	—	—	—	—	—
Total		1,205	1,027	804	662	564	490	433
Total C-NP Region:								
Lumber and wood products	24	137,318	117,303	104,280	91,413	84,782	77,585	73,816
Pulp and paper	26	28,471	30,231	33,180	36,643	34,410	32,411	30,189
Total		165,789	147,534	137,460	128,056	119,192	109,996	104,005

¹ More detailed employment projections are shown in tables 41 through 47 in the appendix.

² Data have not been rounded so that summary totals will agree.

*Table 14.—Employment in the lumber and wood products industries
in the Columbia-North Pacific Region, by subregion and State, 1965,
with projections to the year 2020¹
(Number of persons)*

Subregion and State	1965	1970	1980	1990	2000	2010	2020
1. Clark Fork- Kootenai-Spokane:							
Idaho	3,835	3,796	3,488	3,233	2,803	2,536	2,308
Montana	7,615	6,447	7,163	4,996	3,978	3,764	3,538
Washington	1,680	1,765	1,711	1,578	1,480	1,367	1,297
Total	13,130	12,008	12,362	9,807	8,261	7,667	7,143
2. Upper Columbia:							
Washington	2,805	3,098	3,003	2,702	2,469	2,214	2,055
3. Yakima:							
Washington	1,799	1,999	1,981	1,853	1,741	1,632	1,570
4. Upper Snake:							
Idaho	310	320	297	276	240	219	200
Wyoming	(2)	(2)	(2)	(2)	(2)	(2)	(2)
Total	310	320	297	276	240	219	200
5. Central Snake:							
Idaho	2,484	2,760	2,648	2,519	2,284	2,149	2,031
Oregon	556	544	519	463	423	380	343
Total	3,040	3,304	3,167	2,982	2,707	2,529	2,374
6. Lower Snake:							
Idaho	4,886	4,510	3,946	3,541	2,880	2,448	2,090
Oregon	1,216	1,162	1,082	971	890	807	733
Washington	68	69	66	59	54	46	42
Total	6,170	5,741	5,094	4,571	3,824	3,301	2,865
7. Mid-Columbia:							
Oregon	5,943	5,270	4,641	4,170	3,837	3,553	3,319
Washington	1,308	1,444	1,431	1,329	1,244	1,159	1,108
Total	7,251	6,714	6,072	5,499	5,081	4,712	4,427
8. Lower Columbia:							
Oregon	1,235	874	665	555	505	453	447
Washington	10,633	8,900	7,895	6,851	6,507	5,714	5,247
Total	11,868	9,774	8,560	7,406	7,012	6,167	5,694
9. Willamette:							
Oregon	34,565	27,720	23,226	20,587	19,527	18,197	17,949
10. Coastal:							
Oregon	26,533	20,791	16,873	14,576	13,602	12,435	12,194
Washington	7,127	6,328	5,897	5,342	5,084	4,531	4,311
Total	33,660	27,119	22,770	19,918	18,686	16,966	16,505
11. Puget Sound:							
Washington	21,515	18,479	16,944	15,150	14,670	13,491	12,601
12. Oregon Closed Basin:							
Oregon	1,205	1,027	804	662	564	490	433
State total:							
Idaho	11,515	11,386	10,379	9,569	8,207	7,352	6,629
Montana	7,615	6,447	7,163	4,996	3,978	3,764	3,538
Oregon	71,253	57,388	47,810	41,984	39,348	36,315	35,418
Washington	46,935	42,082	38,928	34,864	33,249	30,154	28,231
Wyoming	(2)	(2)	(2)	(2)	(2)	(2)	(2)
Grand total	137,318	117,303	104,280	91,413	84,782	77,585	73,816

¹ Data have not been rounded so that summary totals will agree.

² Negligible.

*Table 15.—Employment in the pulp, paper, and allied products industries
in the Columbia-North Pacific Region, by subregion and State, 1965,
with projections to the year 2020¹*

(Number of persons)

Subregion and State	1965	1970	1980	1990	2000	2010	2020
1. Clark Fork- Kootenai-Spokane:							
Idaho	—	—	—	—	—	—	—
Montana	300 ²	428	571	619	852	873	866
Washington	450	428	351	298	288	280	295
Total	750	856	922	917	1,140	1,153	1,161
2. Upper Columbia:							
Washington	83 ²	88	83	80	76	75	79
3. Yakima:							
Washington	168	165	254	310	300	291	306
4. Upper Snake:							
Idaho	70 ²	86	76	71	227	355	454
Wyoming	—	—	—	—	—	—	—
Total	70	86	76	71	227	355	454
5. Central Snake:							
Idaho	—	—	222	513	479	570	822
Oregon	—	—	—	—	—	—	—
Total	—	—	222	513	479	570	822
6. Lower Snake:							
Idaho	800 ²	928	841	855	784	809	752
Oregon	—	—	—	—	—	—	—
Washington	—	—	—	—	—	—	—
Total	800 ²	928	841	855	784	809	752
7. Mid-Columbia:							
Oregon	230 ²	444	533	816	846	801	720
Washington	430	421	351	306	296	287	302
Total	660	865	884	1,122	1,142	1,088	1,022
8. Lower Columbia:							
Oregon	908	1,185	1,313	1,330	1,218	1,095	998
Washington	7,555	7,245	7,911	9,020	8,360	7,867	7,174
Total	8,463	8,430	9,224	10,350	9,578	8,962	8,172
9. Willamette:							
Oregon	5,379	6,866	7,607	7,709	7,060	6,345	5,782
10. Coastal:							
Oregon	995	1,299	1,439	1,458	1,336	1,200	1,094
Washington	1,258	1,206	1,317	1,501	1,392	1,310	1,194
Total	2,253	2,505	2,756	2,959	2,728	2,510	2,288
11. Puget Sound:							
Washington	9,845	9,442	10,311	11,757	10,896	10,253	9,351
12. Oregon Closed Basin:							
Oregon	—	—	—	—	—	—	—
State total:							
Idaho	870 ³	1,014	1,139	1,439	1,490	1,734	2,028
Montana	300	428	571	619	852	873	866
Oregon	7,512	9,794	10,892	11,313	10,460	9,441	8,594
Washington	19,789	18,995	20,578	23,272	21,608	20,363	18,701
Wyoming	—	—	—	—	—	—	—
Grand total	28,471	30,231	33,180	36,643	34,410	32,411	30,189

¹Data have not been rounded so that summary totals will agree.

²Estimated to avoid disclosing figures for individual companies.

³Totals differ slightly from official State figures to avoid disclosing data for individual companies.

*Table 16.—Employment in forest management in the Columbia-North Pacific Region,
by subregion and the United States, 1962,
with projections to years 1980, 2000, and 2020^{1 2}
(Number of persons)*

Subregion	1962	1980	2000	2020
1. Clark Fork-Kootenai-Spokane	1,572	2,246	3,340	4,185
2. Upper Columbia	436	622	926	1,160
3. Yakima	318	455	677	848
4. Upper Snake	61	88	130	163
5. Central Snake	402	575	856	1,072
6. Lower Snake	840	1,200	1,786	2,237
7. Mid-Columbia	836	1,195	1,778	2,227
8. Lower Columbia	1,990	2,843	4,230	5,298
9. Willamette	3,085	4,404	6,558	8,216
10. Coastal	5,352	7,646	11,376	14,250
11. Puget Sound	2,324	3,321	4,940	6,189
12. Oregon Closed Basin	284	405	603	755
Total, Columbia-North Pacific	17,500	25,000	37,200	46,600
Total, United States	90,800	129,300	191,600	239,900

¹Forest management is the protection and management for the production of timber and related products.

²Allocation of forest management employment to subregions was based on 1964 timber harvest relationships.

*Table 17.—Income (payrolls) in the lumber and wood products industries
in the Columbia-North Pacific Region, by subregion, 1962,
with projections to years 1980, 2000, and 2020
(Thousand dollars)*

Subregion	1962	1980	2000	2020
1. Clark Fork-Kootenai-Spokane	66,273	94,001	77,026	74,059
2. Upper Columbia	13,842	22,835	23,021	21,306
3. Yakima	8,876	15,064	16,233	16,278
4. Upper Snake	1,613	2,258	2,238	2,074
5. Central Snake	15,697	24,081	25,240	24,614
6. Lower Snake	31,818	38,735	35,655	29,704
7. Mid-Columbia	36,143	46,171	47,375	45,899
8. Lower Columbia	58,649	65,090	65,379	59,035
9. Willamette	172,685	176,611	182,070	186,095
10. Coastal	167,740	173,143	174,228	171,124
11. Puget Sound	106,196	128,842	136,783	130,647
12. Oregon Closed Basin	6,018	6,114	5,259	4,489
Total	685,550	792,945	790,507	765,324

*Table 18.—Income (payrolls) in the pulp, paper, and allied products industries
in the Columbia-North Pacific Region, by subregion, 1962,
with projections to years 1980, 2000, and 2020
(Thousand dollars)*

Subregion	1962	1980	2000	2020
1. Clark Fork-Kootenai-Spokane	4,061	9,338	15,981	20,662
2. Upper Columbia	536	841	1,065	1,405
3. Yakima	1,001	2,573	4,205	5,446
4. Upper Snake	452	769	3,182	8,080
5. Central Snake	—	2,248	6,715	14,629
6. Lower Snake	5,003	8,518	10,990	13,383
7. Mid-Columbia	4,003	8,953	16,009	18,189
8. Lower Columbia	50,764	93,421	134,264	145,437
9. Willamette	33,416	77,043	98,967	102,902
10. Coastal	13,693	27,913	38,241	40,720
11. Puget Sound	58,801	104,430	152,740	166,420
12. Oregon Closed Basin	—	—	—	—
Total	171,730	336,047	482,359	537,273

Table 19.—Income (payrolls) in forest management in the Columbia-North Pacific Region, by subregion and the United States, 1962, with projections to years 1980, 2000, and 2020^{1 2}
(Thousand dollars)

Subregion	1962	1980	2000	2020
1. Clark Fork-Kootenai-Spokane	7,858	17,502	42,655	87,582
2. Upper Columbia	2,179	4,853	11,828	24,285
3. Yakima	1,592	3,547	8,645	17,750
4. Upper Snake	306	682	1,662	3,414
5. Central Snake	2,012	4,483	10,925	22,432
6. Lower Snake	4,200	9,355	22,800	46,814
7. Mid-Columbia	4,182	9,316	22,705	46,619
8. Lower Columbia	9,949	22,160	54,008	110,892
9. Willamette	15,426	34,361	83,742	171,945
10. Coastal	26,758	59,601	145,255	298,247
11. Puget Sound	11,620	25,883	63,080	129,520
12. Oregon Closed Basin	1,418	3,157	7,695	15,800
Total Columbia-North Pacific	87,500	194,900	475,000	975,300
Total United States	454,000	1,010,600	2,456,900	5,045,700

¹ Forest management is the protection and management of forests for the production of timber and related products.

² Allocation of forest management employment and payrolls to subregions was based on 1964 timber harvest relationships.

CONCLUSION

The Columbia-North Pacific Region has a large timber resource and a large forest industry based on that resource. After more than a century, lumber is still the primary forest product of the Region. Manufacturing of pulp, paper, and allied products, veneer and plywood, and board products has been and will continue to be of increasing importance. With the Nation's population increasing and personal incomes rising, the demand for timber products will increase. However, limited timber supply will be a constraint on the growth of the timber economy in the Columbia-North Pacific Region.

The forest industry's period of most rapid growth in the Columbia-North Pacific Region can probably be regarded as past history. Although continued growth of the forest industry can be expected, it will be at a much slower rate. In those areas with major untapped timber supplies, the industry can be expected to grow faster than in the Region as a whole. Generally, this new expansion will occur in subregions east of the Cascade Range.

With the shift in the product mix and the leveling off of wood fiber consumption in the future, the characteristics of the industry will continue to change. There will be fewer lumber mills and plywood plants, but the average capacity per mill will increase. Because of the need for better utilization of wood in such a competitive wood market, firms will tend to continue their integration of wood processing facilities. The capital supply, the raw material supply, the technical skills required, and the long-range outlook required, suggest a continuing trend toward more mergers and consolidation of forest-land ownership. The forest industry labor force will be shifting from lumber manufacture to plywood manufacture, pulp and paper processing, and secondary manufacturing of wood products. Some labor will become surplus

to the forest industries, but the growth of the whole economy envisioned in this study should create job opportunities for displaced forest industry workers in other areas of economic activity.

As markets continue to expand within the Columbia-North Pacific Region, new types of industry will be attracted, and the Region will become less dependent on its timber economy. However, due to the nature of the forest industries and their tendency to locate near raw material supplies, many smaller communities scattered throughout the Region will continue to be highly dependent on timber-based activities.

The projected population increase in the Region and the Nation will act as a constraint on timber supply. People need water, roads, power, industrial sites, recreation areas, and home sites; and forested land is frequently required to fulfill these needs. For example, when forests are taken out of production for roads, powerlines, and home sites, this in effect reduces the longrun potential supply of timber, and it is possible that consumers may have to pay higher prices for timber products in the future. Recreation use also removes some forest land from production. In this study, it was assumed that present trends in forest-land loss would continue in the Columbia-North Pacific Region and the projections of wood fiber consumption reflect this limitation.

Man is more and more concerned with his environment and how it is affected by industrial activity. Allowance was made for this concern in projections, and it has been assumed that technology of pollution abatement will advance sufficiently to allow the projections of consumption to be realized. Economic activity ought to make man better off; it is hoped that, in some measure, this study of the timber economy will contribute to that end.

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APPENDIX OF TABLES

- ¹ A classification in terms of capacity for cubic-foot mean annual growth per acre.
- ² West of Cascade Range in Oregon and Washington.
- ³ East of Cascades in Oregon and Washington including Klamath County, Oregon.
- ⁴ As of January 1, 1968.
- ⁵ Does not include Wyoming.
- ⁶ Less than 500,000 acres.

*Table 21.—Percent of commercial forest land area in the Douglas-fir region,
by yield class and owner class, January 1, 1963^{1 2}*

Yield class ³	National Forest	Other public	Forest industry	Farmer and miscellaneous private
120 cubic feet or more	45	66	72	63
85–120 cubic feet	24	16	16	17
50–85 cubic feet	23	14	9	16
Less than 50 cubic feet	8	4	3	4
Total	100	100	100	100

¹ From Gedney et al. (1966).

² West of the Cascade Range in Oregon and Washington.

³ A classification in terms of capacity for cubic-foot mean annual growth per acre.

*Table 22.—Percent of commercial forest land area in the ponderosa pine region,
by yield class and owner class, January 1, 1963^{1 2}*

Yield class ³	National Forest	Other public	Forest industry	Farmer and miscellaneous private
120 cubic feet or more	2	8	5	3
85–120 cubic feet	10	18	18	22
50–85 cubic feet	64	52	57	49
Less than 50 cubic feet	24	22	20	26
Total	100	100	100	100

¹From Gedney et al. (1966).

²East of the Cascade Range in Washington and Oregon.

³A classification in terms of capacity for cubic-foot mean annual growth per acre.

Table 23.—Percent of commercial forest land area in the State of Idaho, by yield class and owner class, January 1, 1968¹

Yield class ²	National Forest	Other public	Forest industry	Farmer and miscellaneous private
120 cubic feet or more	15	20	31	13
85–120 cubic feet	23	30	27	30
50–85 cubic feet	35	33	38	41
Less than 50 cubic feet	27	17	4	16
Total	100	100	100	100

Source: Intermountain Forest and Range Experiment Station.

¹The entire State.

²A classification in terms of capacity for cubic-foot mean annual growth per acre.

Table 24.—Percent of commercial forest land area in western Montana, by yield class and owner class, January 1, 1968

Yield class ¹	National Forest	Other public	Forest industry	Farmer and miscellaneous private
120 cubic feet or more	2	—	3	1
85–120 cubic feet	16	4	14	6
50–85 cubic feet	39	48	47	46
Less than 50 cubic feet	43	48	36	47
Total	100	100	100	100

Source: Intermountain Forest and Range Experiment Station.

¹A classification in terms of capacity for cubic-foot mean annual growth per acre.

Table 25.—Area by land class, subregion, and State in the Columbia-North Pacific Region,
January 1, 1966

(In thousand acres)

Subregion and State	Total land area ¹	Forest land				Total nonforest land
		Total	Commercial	Productive- reserved	Unproductive	
1. Clark Fork- Kootenai-Spokane: Idaho and Montana ²	20,870	17,021	14,560	888	1,573	3,849
Washington	2,028	1,237	1,177	28	32	791
Total	22,898	18,258	15,737	916	1,605	4,640
2. Upper Columbia: Washington	14,638	5,922	4,881	228	813	8,716
3. Yakima: Washington	5,313	1,897	1,645	74	178	3,416
4. Upper Snake: Idaho and Wyoming ²	19,417	3,528	2,225	324	979	15,889
5. Central Snake: Idaho	13,891	4,414	3,004	461	949	9,477
Oregon	8,303	840	673	5	162	7,463
Total	22,194	5,254	3,677	466	1,111	16,940
6. Lower Snake: Idaho	14,701	9,689	7,059	1,242	1,388	5,012
Oregon	3,311	1,923	1,657	80	186	1,388
Washington	2,246	182	165	(³)	17	2,064
Total	20,258	11,794	8,881	1,322	1,591	8,464
7. Mid-Columbia: Oregon	15,533	6,987	5,215	98	1,674	8,546
Washington	2,598	752	693	1	58	1,846
Total	18,131	7,739	5,908	99	1,732	10,392
8. Lower Columbia: Oregon	413	343	336	—	7	70
Washington	3,946	3,388	3,199	46	143	558
Total	4,359	3,731	3,535	46	150	628
9. Willamette: Oregon	8,432	6,201	5,895	186	120	2,231
10. Coastal: Oregon	10,019	9,026	8,593	65	368	993
Washington	1,815	1,671	1,620	15	36	144
Total	11,834	10,697	10,213	80	404	1,137
11. Puget Sound: Washington	10,096	7,921	6,071	849	1,001	2,175
12. Oregon Closed Basin: Oregon	11,776	2,120	1,580	13	527	9,656
Grand total	169,346	85,062	70,248	4,603	10,211	84,284

¹Source: U.S. Bureau of Census.

²Individual State statistics not available.

³Less than 500 acres.

Table 26.—Area of commercial forest land, by forest type and ownership and by subregion and State
in the Columbia-North Pacific Region, January 1, 1966

(In thousand acres)

Subregion and State	Total all types			Total softwood types			Total hardwood types			Nonstocked		
	All owners	Public	Private	All owners	Public	Private	All owners	Public	Private	All owners	Public	Private
1. Clark Fork- Idaho and Montana ¹ Washington	14,560 1,177	10,227 560	4,333 617	14,441 1,100	10,211 535	4,230 565	119 13	16 5	103 8	— 64	(2) 20	— 44
Total	15,737	10,787	4,950	15,541	10,746	4,795	132	21	111	64	20	44
2. Upper Columbia: Washington	4,881	3,622	1,259	4,747	3,550	1,197	40	18	22	94	54	40
3. Yakima: Washington	1,645	1,208	437	1,631	1,200	431	8	5	3	6	3	3
4. Upper Snake: Idaho and Wyoming ¹	2,225	2,054	171	2,139	2,007	132	86	47	39	—	(2)	—
5. Central Snake: Idaho Oregon	3,004 673	2,644 529	360 144	2,993 664	2,638 522	355 142	11 3	6 2	5 1	— 6	(2) 5	— 1
Total	3,677	3,173	504	3,657	3,160	497	14	8	6	6	5	1
6. Lower Snake: Idaho Oregon Washington	7,059 1,657 165	5,966 1,084 113	1,093 573 52	7,053 1,639 163	5,962 1,070 111	1,091 569 52	6 5 (3)	4 1 —	2 4 (3)	(2) 13 2	— 13 2	— (3) (3)
Total	8,881	7,163	1,718	8,855	7,143	1,712	11	5	6	15	15	(3)
7. Mid-Columbia: Oregon Washington	5,215 693	4,005 256	1,210 437	5,079 681	3,916 251	1,163 430	39 2	15 —	24 2	97 10	74 5	23 5
Total	5,908	4,261	1,647	5,760	4,167	1,593	41	15	26	107	79	28
8. Lower Columbia: Oregon Washington	336 3,199	19 1,412	317 1,787	235 2,571	11 1,274	224 1,297	101 532	8 100	93 432	— 96	— 38	— 58
Total	3,535	1,431	2,104	2,806	1,285	1,521	633	108	525	96	38	58
9. Willamette: Oregon	5,895	3,168	2,727	4,999	3,009	1,990	716	91	625	180	68	112
10. Coastal: Oregon Washington	8,593 1,620	4,782 504	3,811 1,116	6,591 1,403	4,077 458	2,514 945	1,453 148	455 17	998 131	549 69	250 29	299 40
Total	10,213	5,286	4,927	7,994	4,535	3,459	1,601	472	1,129	618	279	339
11. Puget Sound: Washington	6,071	2,658	3,413	4,930	2,434	2,496	1,065	184	881	76	40	36
12. Oregon Closed Basin: Oregon	1,580	1,217	363	1,520	1,175	345	18	9	9	42	33	9
Grand total	70,248	46,028	24,220	64,579	44,411	20,168	4,365	983	3,382	1,304	634	670

¹ Individual State statistics not available.

² 1,088,000 acres of nonstocked commercial forest land are included in the forest type data for the States of Idaho, Montana and Wyoming.

³ Less than 500 acres.

Table 27.—Area of commercial forest land, by softwood forest type and ownership

(In

Subregion and State	Douglas-fir			Hemlock—Sitka spruce			Ponderosa pine		
	All owners	Public	Private	All owners	Public	Private	All owners	Public	Private
1. Clark Fork- Kootenai-Spokane: Idaho and Montana ^{1 2} Washington Total	3,906 437 4,343	2,546 253 2,799	1,360 184 1,544	243 41 284	171 36 207	72 5 77	1,960 233 2,193	961 44 1,005	999 189 1,188
2. Upper Columbia: Washington	1,779	1,337	442	40	23	17	1,879	1,352	527
3. Yakima: Washington	344	242	102	28	13	15	860	611	249
4. Upper Snake: Idaho and Wyoming ^{1 2}	1,035	932	103	—	—	—	2	1	1
5. Central Snake: Idaho ² Oregon Total	1,134 88 1,222	1,076 67 1,143	58 21 79	— — —	— — —	— — —	947 436 1,383	707 327 1,034	240 109 349
6. Lower Snake: Idaho Oregon Washington Total	2,400 385 45 2,830	2,067 270 36 2,373	333 115 9 457	1 — 4 5	1 — 4 5	— — — —	599 602 64 1,265	384 292 27 703	215 310 37 562
7. Mid-Columbia: Oregon Washington Total	867 216 1,083	636 92 728	231 124 355	36 6 42	36 6 42	— (3) (3)	2,562 377 2,939	1,803 96 1,899	759 281 1,040
8. Lower Columbia: Oregon Washington Total	220 1,705 1,925	11 758 769	209 947 1,156	15 554 569	— 246 246	15 308 323	— 3 3	— 3 3	— — —
9. Willamette: Oregon	4,043	2,310	1,733	493	313	180	5	5	—
10. Coastal: Oregon Washington Total	4,779 435 5,214	3,008 105 3,113	1,771 330 2,101	826 908 1,734	299 297 596	527 611 1,138	142 — 142	120 — 120	22 — 22
11. Puget Sound: Washington	2,478	955	1,523	1,777	923	854	(3)	(3)	—
12. Oregon Closed Basin: Oregon	510	494	16	—	—	—	594	382	212
Grand total	26,806	17,195	9,611	4,972	2,368	2,604	11,265	7,115	4,150

¹ Separate data not available.

² 1,088,000 acres of nonstocked commercial forest land are included in the forest type data for the States of Idaho, Montana, and Wyoming.

³ Less than 500 acres.

and by subregion and State in the Columbia-North Pacific Region, January 1, 1966

thousand acres)

White pine			Lodgepole pine			Larch			Fir-spruce			Other softwoods		
All owners	Public	Private	All owners	Public	Private	All owners	Public	Private	All owners	Public	Private	All owners	Public	Private
558	497	61	3,111	2,527	584	2,592	1,973	619	1,728	1,373	355	343	163	180
72	61	11	188	60	128	67	37	30	62	44	18	—	—	—
630	558	72	3,299	2,587	712	2,659	2,010	649	1,790	1,417	373	343	163	180
24	22	2	438	370	68	293	211	82	294	235	59	—	—	—
14	9	5	74	65	9	86	72	14	225	188	37	—	—	—
—	—	—	783	758	25	—	—	—	309	306	3	10	10	(2)
—	—	—	240	235	5	7	7	—	647	595	52	18	18	—
—	—	—	39	37	2	42	37	5	59	54	5	—	—	—
—	—	—	279	272	7	49	44	5	706	649	57	18	18	—
253	219	34	1,484	1,440	44	179	119	60	1,821	1,503	318	316	229	87
3	3	(3)	161	134	27	169	133	36	319	238	81	—	—	—
—	—	—	7	7	—	10	10	(3)	33	27	6	—	—	—
256	222	34	1,652	1,581	71	358	262	96	2,173	1,768	405	316	229	87
3	3	—	614	574	40	191	171	20	762	679	83	44	14	30
—	—	—	7	5	2	14	12	2	61	40	21	—	—	—
3	3	—	621	579	42	205	183	22	823	719	104	44	14	30
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
15	15	—	15	15	—	—	—	—	279	237	42	—	—	—
15	15	—	15	15	—	—	—	—	279	237	42	—	—	—
16	16	—	43	34	9	1	1	—	398	330	68	—	—	—
181	173	8	96	76	20	—	—	—	557	398	159	10	3	7
6	5	1	10	7	3	—	—	—	44	44	—	—	—	—
187	178	9	106	83	23	—	—	—	601	442	159	10	3	7
5	4	1	18	10	8	—	—	—	652	542	110	—	—	—
7	7	—	188	134	54	—	—	—	202	139	63	19	19	—
1,157	1,034	123	7,516	6,488	1,028	3,651	2,783	868	8,452	6,972	1,480	760	456	304

*Table 28.—Area of commercial forest land, by ownership, subregion, and State
in the Columbia-North Pacific Region, January 1, 1966*

(In thousand acres)

Subregion and State	All owner- ships	Federal					State, county, and municipal	Private
		Total	National Forest	Bureau of Land Management	Indian	Miscel- laneous		
1. Clark Fork- Kootenai-Spokane: Idaho and Montana ¹ Washington	14,560 1,177	9,433 496	8,803 486	254 —	373 —	3 10	794 64	4,333 ² 617
Total	15,737	9,929	9,289	254	373	13	858	4,950
2. Upper Columbia: Washington	4,881	3,217	2,062	193	957	5	405	1,259
3. Yakima: Washington	1,645	1,082	622	5	455	(4)	126	437
4. Upper Snake: Idaho and Wyoming ¹	2,225	2,014	1,957	47	10	—	40	171
5. Central Snake: Idaho Oregon Total	3,004 673 3,677	2,465 528 2,993	2,423 504 2,927	42 24 66	— — —	— — —	179 1 180	360 ³ 144 504
6. Lower Snake: Idaho Oregon Washington Total	7,059 1,657 165 8,881	5,627 1,076 110 6,813	5,414 1,065 109 6,588	186 9 1 196	20 2 — 22	7 — — 7	339 8 3 350	1,093 573 52 1,718
7. Mid-Columbia: Oregon Washington Total	5,215 693 5,908	3,964 178 4,142	3,550 128 3,678	91 9 100	323 41 364	— — —	41 78 119	1,210 437 1,647
8. Lower Columbia: Oregon Washington Total	336 3,199 3,535	12 1,071 1,083	— 1,065 1,065	12 2 14	— 1 1	— 3 3	7 341 348	317 1,787 2,104
9. Willamette: Oregon	5,895	2,971	2,382	589	—	—	197	2,727
10. Coastal: Oregon Washington Total	8,593 1,620 10,213	4,153 303 4,456	2,527 138 2,665	1,626 — 1,626	— 165 165	— — —	629 201 830	3,811 1,116 4,927
11. Puget Sound: Washington	6,071	1,697	1,557	9	69	62	961	3,413
12. Oregon Closed Basin: Oregon	1,580	1,215	1,193	22	—	—	2	363
Grand total	70,248	41,612	35,985	3,121	2,416	90	4,416	24,220 ^{2 3}

¹Individual State statistics not available.

²Includes Coeur d'Alene Indian Reservation (22,000 acres).

³Contains a negligible amount of county and municipal land.

⁴Less than 500 acres.

Table 29.—Area of commercial forest land, by stand-size class and ownership,

(In

Subregion and State	All size classes			Sawtimber		
	Total	Public	Private	Total	Public	Private
1. Clark Fork-Kootenai-Spokane: Idaho and Montana ¹ Washington	14,560 1,177	10,227 560	4,333 ² 617	8,998 497	6,060 294	2,938 203
Total	15,737	10,787	4,950	9,495	6,354	3,141
2. Upper Columbia: Washington	4,881	3,622	1,259	3,430	2,806	624
3. Yakima: Washington	1,645	1,208	437	1,523	1,134	389
4. Upper Snake: Idaho and Wyoming ¹	2,225	2,054	171	1,847	1,711	136
5. Central Snake: Idaho Oregon	3,004 673	2,644 529	360 144	2,687 505	2,365 430	322 75
Total	3,677	3,173	504	3,192	2,795	397
6. Lower Snake: Idaho Oregon Washington	7,059 1,657 165	5,966 1,084 113	1,093 573 52	4,789 1,325 138	3,915 879 91	874 446 47
Total	8,881	7,163	1,718	6,252	4,885	1,367
7. Mid-Columbia: Oregon Washington	5,215 693	4,005 256	1,210 437	3,604 493	2,819 213	785 280
Total	5,908	4,261	1,647	4,097	3,032	1,065
8. Lower Columbia: Oregon Washington	336 3,199	19 1,412	317 1,787	144 1,985	— 1,036	144 949
Total	3,535	1,431	2,104	2,129	1,036	1,093
9. Willamette: Oregon	5,895	3,168	2,727	3,752	2,443	1,309
10. Coastal: Oregon Washington	8,593 1,620	4,782 504	3,811 1,116	5,425 789	3,568 281	1,857 508
Total	10,213	5,286	4,927	6,214	3,849	2,365
11. Puget Sound: Washington	6,071	2,658	3,413	3,269	1,806	1,463
12. Oregon Closed Basin: Oregon	1,580	1,217	363	1,155	882	273
Grand total	70,248	46,028	24,220	46,355	32,733	13,622

¹Individual State statistics not available.

²Includes Coeur d'Alene Indian Reservation.

³Less than 500 acres.

subregion, and State in the Columbia-North Pacific Region, January 1, 1966

(thousand acres)

Poletimber			Saplings and seedlings			Nonstocked		
Total	Public	Private	Total	Public	Private	Total	Public	Private
3,653	2,778	875	1,400	1,017	383	509	372	137
413	131	282	203	115	88	64	20	44
4,066	2,909	1,157	1,603	1,132	471	573	392	181
972	501	471	385	261	124	94	54	40
90	56	34	26	15	11	6	3	3
261	235	26	104	96	8	13	12	1
65	54	11	213	188	25	39	37	2
137	73	64	25	21	4	6	5	1
202	127	75	238	209	29	45	42	3
1,111	1,085	26	654	536	118	505	430	75
305	185	120	14	7	7	13	13	(3)
24	20	4	1	—	1	2	2	(3)
1,440	1,290	150	669	543	126	520	445	75
1,113	809	304	401	303	98	97	74	23
171	33	138	19	5	14	10	5	5
1,284	842	442	420	308	112	107	79	28
84	19	65	108	—	108	—	—	—
390	152	238	728	186	542	96	38	58
474	171	303	836	186	650	96	38	58
586	326	260	1,377	331	1,046	180	68	112
759	415	344	1,860	549	1,311	549	250	299
388	116	272	374	78	296	69	29	40
1,147	531	616	2,234	627	1,607	618	279	339
1,883	540	1,343	843	272	571	76	40	36
265	225	40	118	77	41	42	33	9
12,670	7,753	4,917	8,853	4,057	4,796	2,370	1,485	885

Table 30.—Volume of timber on commercial forest land, by class of timber, softwoods and
(In million

Subregion and State	Total all timber			Growing-stock					
				Total			Sawtimber		
	All species	Soft-woods	Hard-woods	All species	Soft-woods	Hard-woods	All species	Soft-woods	Hard-woods
1. Clark Fork-Kootenai-Spokane: Idaho and Montana Washington Total	28,589 ¹ 1,924 30,513	28,481 ¹ 1,899 30,380	108 ¹ 25 133	28,589 1,808 30,397	28,481 1,783 30,264	108 25 133	19,071 1,118 20,189	19,013 1,112 20,125	58 6 64
2. Upper Columbia: Washington	9,870	9,773	97	9,296	9,227	69	6,624	6,595	29
3. Yakima: Washington	6,339	6,314	25	6,203	6,178	25	5,329	5,319	10
4. Upper Snake: Idaho and Wyoming	4,350 ¹	4,284	66 ¹	4,350	4,284	66	2,747	2,726	21
5. Central Snake: Idaho Oregon Total	5,599 ¹ 1,542 7,141	5,593 ¹ 1,538 7,131	6 ¹ 4 10	5,599 1,516 7,115	5,593 1,512 7,105	6 4 10	4,527 1,261 5,788	4,525 1,258 5,783	2 3 5
6. Lower Snake: Idaho Oregon Washington Total	14,770 ¹ 3,744 407 18,921	14,747 ¹ 3,723 407 18,877	23 ¹ 21 (³) 44	14,770 3,696 400 18,866	14,747 3,677 400 18,824	23 19 — 42	10,338 2,762 302 13,402	10,332 2,754 302 13,388	6 8 — 14
7. Mid-Columbia: Oregon Washington Total	12,593 1,523 14,116	12,525 1,512 14,037	68 11 79	12,238 1,504 13,742	12,206 1,495 13,701	32 9 41	9,719 1,253 10,972	9,708 1,250 10,958	11 3 14
8. Lower Columbia: Oregon Washington Total	722 17,262 17,984	513 16,224 16,737	209 1,038 1,247	712 15,918 16,630	512 15,005 15,517	200 913 1,113	445 14,133 14,578	340 13,662 14,002	105 471 576
9. Willamette: Oregon	29,825	27,959	1,866	28,725	27,020	1,705	25,795	24,808	987
10. Coastal: Oregon Washington Total	39,046 8,129 47,175	34,722 7,405 42,127	4,324 724 5,048	37,128 7,681 44,809	33,386 6,981 40,367	3,742 700 4,442	33,468 6,366 39,834	31,159 6,020 37,179	2,309 346 2,655
11. Puget Sound: Washington	27,349	25,119	2,230	26,463	24,375	2,088	22,717	21,608	1,109
12. Oregon Closed Basin: Oregon	3,300	3,291	9	3,187	3,180	7	2,794	2,793	1
Grand total	216,883	206,029	10,854	209,783	200,042	9,741	170,769	165,284	5,485

¹ Does not include estimates of cull and salvable dead tree volume.

² Data not available.

³ Less than 300,000 cubic feet.

hardwoods, subregion, and State in the Columbia-North Pacific Region, January 1, 1966
cubic feet)

trees			Rough (sound cull) trees			Rotten cull trees			Salvable dead trees		
Poletimber											
All species	Soft- woods	Hard- woods	All species	Soft- woods	Hard- woods	All species	Soft- woods	Hard- woods	All species	Soft- woods	Hard- woods
9,518 690	9,468 671	50 19	(²) 7	(²) 7	(²) (³)	(²) 65	(²) 65	(²) (³)	(²) 44	(²) 44	(²) —
10,208	10,139	69	7	7	(³)	65	65	(³)	44	44	—
2,672	2,632	40	221	199	22	96	91	5	257	256	1
874	859	15	6	6	(³)	17	17	(³)	113	113	(³)
1,603	1,558	45	(²)	(²)	(²)	(²)	(²)	(²)	(²)	(²)	(²)
1,072 255	1,068 254	4 1	(²) 10	(²) 10	(²) (³)	(²) 1	(²) 1	(²) (³)	(²) 15	(²) 15	(²) —
1,327	1,322	5	10	10	(³)	1	1	(³)	15	15	—
4,432 934 98	4,415 923 98	17 11 (³)	— 15 1	— 13 1	— 2 (³)	— 9 5	— 9 5	— (³) (³)	— 24 1	— 24 1	— — (³)
5,464	5,436	28	16	14	2	14	14	—	25	25	—
2,519 251	2,498 245	21 6	149 2	113 1	36 1	39 10	39 9	(³) 1	167 7	167 7	(³) —
2,770	2,743	27	151	114	37	49	48	1	174	174	(³)
267 1,785	172 1,343	95 442	9 174	— 85	9 89	— 22	— 21	— 1	1 1,148	1 1,113	— 35
2,052	1,515	537	183	85	98	22	21	1	1,149	1,114	35
2,930	2,212	718	248	102	146	79	76	3	773	761	12
3,660 1,315	2,227 961	1,433 354	675 40	143 18	532 22	115 46	93 46	22 —	1,128 362	1,100 360	28 2
4,975	3,188	1,787	715	161	554	161	139	22	1,490	1,460	30
3,746	2,767	979	161	41	120	87	77	10	638	626	12
393	387	6	38	36	2	13	13	—	62	62	(³)
39,014	34,758	4,256	1,756	775	981	604	562	42	4,740	4,650	90

Table 31.—Volume of sawtimber on commercial forest land, by species

(Million board feet,

Subregion and State	Total			Douglas-fir	True firs	Lodge-pole pine	Ponderosa and Jeffrey pines	Western white pine	Sugar pine
	All species	Soft-woods	Hard-woods						
1. Clark Fork-Kootenai-Spokane: Idaho and Montana Washington	109,741 6,061	109,449 6,032	292 29	29,726 1,428	12,351 684	5,196 274	11,994 1,017	7,700 539	— —
Total	115,802	115,481	321	31,154	13,035	5,470	13,011	8,239	—
2. Upper Columbia: Washington	37,266	37,101	165	13,920	3,513	810	10,614	432	—
3. Yakima: Washington	29,168	29,118	50	9,044	5,804	960	7,396	648	—
4. Upper Snake: Idaho and Wyoming	15,684	15,579	105	7,461	1,326	3,720	46	—	—
5. Central Snake: Idaho Oregon	27,285 7,213	27,275 7,194	10 19	10,027 1,407	3,990 1,285	1,220 129	8,694 3,283	— 4	— —
Total	34,498	34,469	29	11,434	5,275	1,349	11,977	4	—
6. Lower Snake: Idaho Oregon Washington	58,223 14,860 1,474	58,193 14,820 1,474	30 40 (¹)	16,300 3,677 424	13,654 3,167 319	3,062 601 12	4,319 4,057 487	4,669 9 —	— — —
Total	74,557	74,487	70	20,401	17,140	3,675	8,863	4,678	—
7. Mid-Columbia: Oregon Washington	55,396 6,568	55,340 6,562	56 6	12,785 2,629	8,548 870	1,643 26	24,215 2,658	311 29	— —
Total	61,964	61,902	62	15,414	9,418	1,669	26,873	340	—
8. Lower Columbia: Oregon Washington	2,441 94,130	1,858 91,389	583 2,741	1,615 51,635	— 12,500	— 56	— 37	— 646	— —
Total	96,571	93,247	3,324	53,250	12,500	56	37	646	—
9. Willamette: Oregon	168,542	163,088	5,454	118,187	9,563	287	327	1,690	285
10. Coastal: Oregon Washington	222,866 37,499	209,947 35,760	12,919 1,739	147,030 4,980	13,815 3,527	426 33	3,585 —	1,614 195	4,480 —
Total	260,365	245,707	14,658	152,010	17,342	459	3,585	1,809	4,480
11. Puget Sound: Washington	134,589	129,041	5,548	30,744	27,965	48	10	596	—
12. Oregon Closed Basin: Oregon	16,709	16,706	3	122	2,659	838	12,780	77	38
Grand total	1,045,715	1,015,926	29,789	463,144	125,540	19,341	95,519	19,159	4,803

¹ Less than 500,000 board feet.

group, subregion, and State in the Columbia-North Pacific Region, January 1, 1966

International 1/4-inch rule)

Western larch	Redwood	Sitka spruce	Engelmann or other spruce	Western hemlock	Western red- cedar	Incense- cedar	Other soft- woods	Cotton- wood and aspen	Red alder	Oak	Bigleaf maple	Other hard- woods
19,357	—	—	13,126	—	5,048	—	4,951	196	—	—	—	96
928	—	—	426	408	328	—	—	13	—	—	—	16
20,285	—	—	13,552	408	5,376	—	4,951	209	—	—	—	112
4,023	—	—	2,369	624	448	—	348	157	—	—	—	8
1,792	—	—	850	1,799	151	—	674	49	—	1	—	—
—	—	—	2,728	—	—	—	298	105	—	—	—	—
212	—	—	2,923	—	—	—	209	10	—	—	—	—
762	—	—	322	—	—	—	2	18	—	—	—	1
974	—	—	3,245	—	—	—	211	28	—	—	—	1
2,810	—	—	7,348	264	4,521	—	1,246	30	—	—	—	—
2,110	—	—	1,154	—	—	—	45	40	—	—	—	—
130	—	—	102	—	—	—	—	(1)	—	—	—	(1)
5,050	—	—	8,604	264	4,521	—	1,291	70	—	—	—	—
2,591	—	—	1,739	1,114	199	61	2,134	10	11	23	9	3
241	—	—	76	2	31	—	—	(1)	1	5	—	(1)
2,832	—	—	1,815	1,116	230	61	2,134	10	12	28	9	3
—	—	—	—	101	142	—	—	—	478	—	105	—
55	—	213	187	20,169	4,878	6	1,007	114	1,621	—	955	51
55	—	213	187	20,270	5,020	6	1,007	114	2,099	—	1,060	51
110	—	323	243	23,243	4,521	518	3,791	266	2,625	554	1,508	501
—	267	5,601	90	22,085	3,021	3,874	4,059	113	6,227	3,025	1,490	2,064
—	—	2,478	—	20,436	3,963	—	148	1	1,694	—	44	—
—	267	8,079	90	42,521	6,984	3,874	4,207	114	7,921	3,025	1,534	2,064
—	—	1,734	98	53,948	9,668	—	4,230	500	3,733	1	1,201	113
—	—	—	—	—	—	152	40	3	—	—	—	—
35,121	267	10,349	33,781	144,193	36,919	4,611	23,182	1,625	16,390	3,609	5,312	2,853

Table 32.—Volume of growing stock on commercial forest land, by species group,

(Million

Subregion and State	Total			Douglas- fir	True firs	Lodge- pole pine	Ponderosa and Jeffrey pines	Western white pine	Sugar pine
	All species	Soft- woods	Hard- woods						
1. Clark Fork- Kootenai-Spokane: Idaho and Montana Washington Total	28,589 1,808 30,397	28,481 1,783 30,264	108 25 133	7,166 431 7,597	3,663 195 3,858	4,724 257 4,981	2,243 248 2,491	1,735 123 1,858	— — —
2. Upper Columbia: Washington	9,296	9,227	69	3,339	1,174	822	2,037	86	—
3. Yakima: Washington	6,203	6,178	25	1,788	1,517	307	1,317	149	—
4. Upper Snake: Idaho and Wyoming	4,350	4,284	66	1,557	441	1,671	8	—	—
5. Central Snake: Idaho Oregon Total	5,599 1,516 7,115	5,593 1,512 7,105	6 4 10	1,939 314 2,253	998 305 1,303	549 79 628	1,481 605 2,086	— 1 1	— — —
6. Lower Snake: Idaho Oregon Washington Total	14,770 3,696 400 18,866	14,747 3,677 400 18,824	23 19 (¹) 42	3,767 752 105 4,624	3,497 892 105 4,494	1,989 440 18 2,447	769 877 110 1,756	974 2 — 976	— — — —
7. Mid-Columbia: Oregon Washington Total	12,238 1,504 13,742	12,206 1,495 13,701	32 9 41	2,532 613 3,145	2,252 273 2,525	1,259 13 1,272	4,506 504 5,010	61 6 67	— — —
8. Lower Columbia: Oregon Washington Total	712 15,918 16,630	512 15,005 15,517	200 913 1,113	441 8,109 8,550	— 2,339 2,339	— 26 26	— 9 9	— 116 116	— — —
9. Willamette: Oregon	28,725	27,020	1,705	18,611	2,112	127	56	292	50
10. Coastal: Oregon Washington Total	37,128 7,681 44,809	33,386 6,981 40,367	3,742 700 4,442	22,166 1,068 23,234	2,610 618 3,228	240 8 248	669 — 669	279 50 329	754 — 754
11. Puget Sound: Washington	26,463	24,375	2,088	6,283	5,350	37	1	139	—
12. Oregon Closed Basin: Oregon	3,187	3,180	7	28	599	338	2,144	13	7
Grand total	209,783	200,042	9,741	81,009	28,940	12,904	17,584	4,026	811

¹ Less than 500,000 cubic feet.

subregion, and State in the Columbia-North Pacific Region, January 1, 1966

cubic feet)

Western larch	Redwood	Sitka spruce	Engelmann or other spruce	Western hemlock	Western red- cedar	Incense- cedar	Other soft- woods	Cotton- wood and aspen	Red alder	Oak	Bigleaf maple	Other hard- woods
3,910	—	—	2,615	—	1,248	—	1,177	58	—	—	—	50
254	—	—	107	94	74	—	—	10	—	—	—	15
4,164	—	—	2,722	94	1,322	—	1,177	68	—	—	—	65
842	—	—	578	131	114	—	104	49	3	—	—	17
363	—	—	179	347	36	—	175	24	—	1	—	—
—	—	—	524	—	—	—	83	66	—	—	—	—
36	—	—	546	—	—	—	44	6	—	—	—	—
149	—	—	58	—	—	—	1	4	—	—	—	(1)
185	—	—	604	—	—	—	45	10	—	—	—	(1)
622	—	—	1,543	95	1,091	—	400	10	—	—	—	13
421	—	—	280	—	—	—	13	12	3	—	—	4
30	—	—	32	—	—	—	—	—	—	—	—	(1)
1,073	—	—	1,855	95	1,091	—	413	22	3	—	—	17
499	—	—	384	198	30	16	469	6	9	6	7	4
53	—	—	26	1	6	—	—	—	1	8	—	(1)
552	—	—	410	199	36	16	469	6	10	14	7	4
—	—	—	—	21	50	—	—	—	180	2	18	—
10	—	37	40	3,359	778	1	181	23	639	(1)	233	18
10	—	37	40	3,380	828	1	181	23	819	2	251	18
13	—	57	102	3,855	851	103	791	40	725	348	472	120
—	39	1,111	20	3,635	481	639	743	16	1,627	870	314	915
—	—	390	—	4,085	735	—	27	—	657	—	43	—
—	39	1,501	20	7,720	1,216	639	770	16	2,284	870	357	915
—	—	253	19	9,390	1,968	—	935	89	1,572	1	352	74
—	—	—	—	—	—	39	12	7	—	—	—	—
7,202	39	1,848	7,053	25,211	7,462	798	5,155	420	5,416	1,236	1,439	1,230

Table 33. — Volume of sawtimber on commercial forest land, by ownership, softwoods and hardwoods, subregion, and State in the Columbia-North Pacific Region, January 1, 1966
(Million board feet, International 1/4-inch rule)

Subregion and State	All ownerships			National Forest			Other public			Private		
	All species	Soft-woods	Hard-woods	All species	Soft-woods	Hard-woods	All species	Soft-woods	Hard-woods	All species	Soft-woods	Hard-woods
1. Clark Fork-Kootenai-Spokane: Idaho and Montana Washington	109,741 6,061	109,449 6,032	292 29	66,778 3,334	66,713 3,319	65 15	9,902 377	9,876 376	26 1	33,061 2,350	32,860 2,337	201 13
Total	115,802	115,481	321	70,112	70,032	80	10,279	10,252	27	35,411	35,197	214
2. Upper Columbia: Washington	37,266	37,101	165	20,862	20,835	27	10,836	10,782	54	5,568	5,484	84
3. Yakima: Washington	29,168	29,118	50	13,473	13,473	(1)	9,339	9,326	13	6,356	6,319	37
4. Upper Snake: Idaho and Wyoming	15,684	15,579	105	15,227	15,128	99	162	161	1	295	290	5
5. Central Snake: Idaho Oregon	27,285 7,213	27,275 7,194	10 19	26,057 6,198	26,047 6,184	10 14	467 185	467 185	(1) (1)	761 830	761 825	(1) 5
Total	34,498	34,469	29	32,255	32,231	24	652	652	(1)	1,591	1,586	5
6. Lower Snake: Idaho Oregon Washington	58,223 14,860 1,474	58,193 14,820 1,474	30 40 (1)	42,378 11,642 1,174	42,348 11,639 1,174	30 3 —	4,966 107 22	4,966 107 22	(1) — —	10,879 3,111 278	10,879 3,074 278	(1) 37 —
Total	74,557	74,487	70	55,194	55,161	33	5,095	5,095	(1)	14,268	14,231	37

Table 33. — Volume of sawtimber on commercial forest land, by ownership, softwoods and hardwoods, subregion, and State in the Columbia-North Pacific Region, January 1, 1966—Continued
(Million board feet, International 1/4-inch rule)

Subregion and State	All ownerships			National Forest			Other public			Private		
	All species	Soft-woods	Hard-woods	All species	Soft-woods	Hard-woods	All species	Soft-woods	Hard-woods	All species	Soft-woods	Hard-woods
7. Mid-Columbia: Oregon Washington	55,396 6,568	55,340 6,562	56 6	42,371 1,749	42,350 1,749	21 —	6,468 1,563	6,451 1,561	17 2	6,557 3,256	6,539 3,252	18 4
Total	61,964	61,902	62	44,120	44,099	21	8,031	8,012	19	9,813	9,791	22
8. Lower Columbia: Oregon Washington	2,441 94,130	1,858 91,389	583 2,741	— 44,716	— 44,593	— 123	59 9,364	45 8,996	14 368	2,382 40,050	1,813 37,800	569 2,250
Total	96,571	93,247	3,324	44,716	44,593	123	9,423	9,041	382	42,432	39,613	2,819
9. Willamette: Oregon	168,542	163,088	5,454	104,495	103,367	1,128	24,081	23,355	726	39,966	36,366	3,600
10. Coastal: Oregon Washington	222,866 37,499	209,947 35,760	12,919 1,739	88,929 3,720	86,776 (²)	2,153 (²)	64,435 7,689	61,216 (²)	3,219 (²)	69,502 26,090	61,955 (²)	7,547 (²)
Total	260,365	245,707	14,658	92,649	(²)	(²)	72,124	(²)	(²)	95,592	(²)	(²)
11. Puget Sound: Washington	134,589	129,041	5,548	59,619	(²)	(²)	26,714	(²)	(²)	48,256	(²)	(²)
12. Oregon Closed Basin: Oregon	16,709	16,706	3	13,101	13,098	3	132	132	0	3,476	3,476	0
Grand total	1,045,715	1,015,926	29,789	565,823	(²)	(²)	176,868	(²)	(²)	303,024	(²)	(²)

¹ Less than 500,000 board feet.

² Data not available.

Table 34. — Volume of growing stock on commercial forest land, by ownership, softwoods and hardwoods, subregion, and State in the Columbia-North Pacific Region, January 1, 1966
(In million cubic feet)

Subregion and State	All ownerships			National Forest			Other public			Private		
	All species	Soft-woods	Hard-woods	All species	Soft-woods	Hard-woods	All species	Soft-woods	Hard-woods	All species	Soft-woods	Hard-woods
1. Clark Fork-Kootenai-Spokane: Idaho and Montana Washington	28,589 1,808	28,481 1,783	108 25	17,460 858	17,434 853	26 5	2,670 121	2,661 118	9 3	8,459 829	8,386 812	73 17
Total	30,397	30,264	133	18,318	18,287	31	2,791	2,779	12	9,288	9,198	90
2. Upper Columbia: Washington	9,296	9,227	69	5,085	5,074	11	2,644	2,625	19	1,567	1,528	39
3. Yakima: Washington	6,203	6,178	25	2,910	2,910	(1)	1,928	1,918	10	1,365	1,350	15
4. Upper Snake: Idaho and Wyoming	4,350	4,284	66	4,230	4,168	62	41	40	1	79	76	3
5. Central Snake: Idaho Oregon	5,599 1,516	5,593 1,512	6 4	5,316 1,249	5,310 1,246	6 3	108 46	108 46	(1) (1)	175 221	175 220	(1) 1
Total	7,115	7,105	10	6,565	6,556	9	154	154	(1)	396	395	1
6. Lower Snake: Idaho Oregon Washington	14,770 3,696 400	14,747 3,677 400	23 19 (1)	10,878 2,780 311	10,868 2,778 311	10 2 —	1,235 29 7	1,231 29 7	4 0 (1)	2,657 887 82	2,648 870 82	9 17 (1)
Total	18,866	18,824	42	13,969	13,957	12	1,271	1,267	4	3,626	3,600	26

Table 34. — Volume of growing stock on commercial forest land, by ownership, softwoods and hardwoods, subregion, and State in the Columbia-North Pacific Region, January 1, 1966—Continued
(In million cubic feet)

Subregion and State	All ownerships			National Forest			Other public			Private		
	All species	Soft-woods	Hard-woods	All species	Soft-woods	Hard-woods	All species	Soft-woods	Hard-woods	All species	Soft-woods	Hard-woods
7. Mid-Columbia: Oregon Washington	12,238 1,504	12,206 1,495	32 9	9,083 441	9,072 440	11 1	1,396 326	1,392 322	4 4	1,759 737	1,742 733	17 4
Total	13,742	13,701	41	9,524	9,512	12	1,722	1,714	8	2,496	2,475	21
8. Lower Columbia: Oregon Washington	712 15,918	512 15,005	200 913	— 7,323	— 7,277	— 46	47 1,620	34 1,482	13 138	665 6,975	478 6,246	187 729
Total	16,630	15,517	1,113	7,323	7,277	46	1,667	1,516	151	7,640	6,724	916
9. Willamette: Oregon	28,725	27,020	1,705	17,289	16,943	346	4,077	3,833	244	7,359	6,244	1,115
10. Coastal: Oregon Washington	37,128 7,681	33,386 6,981	3,742 700	14,060 696	13,312 (2)	748 (2)	10,901 1,688	9,846 (2)	1,055 (2)	12,167 5,297	10,228 (2)	1,939 (2)
Total	44,809	40,367	4,442	14,756	(2)	(2)	12,589	(2)	(2)	17,464	(2)	(2)
11. Puget Sound: Washington	26,463	24,375	2,088	10,891	(2)	(2)	5,146	(2)	(2)	10,426	(2)	(2)
12. Oregon Closed Basin: Oregon	3,187	3,180	7	2,440	2,437	3	28	28	0	719	715	4
Grand total	209,783	200,042	9,741	113,300	(2)	(2)	34,058	(2)	(2)	62,425	(2)	(2)

¹ Less than 500,000 cubic feet.

² Data not available.

Table 35.—Total wood fiber consumption in the Columbia-North Pacific Region, by State and by industry group, 1965, with projections to the year 2020

(In million cubic feet)

State and industry group	1965	1970	1980	1990	2000	2010	2020
Eastern Washington:							
Lumber and wood products	218	247	297	322	344	351	368
Woodpulp	37	40	45	50	55	60	70
Total	255	287	342	372	399	411	438
Western Washington:							
Lumber and wood products	775	816	897	848	857	828	707
Woodpulp	507	535	721	978	1,051	1,125	1,150
Total	1,282	1,351	1,618	1,826	1,908	1,953	1,857
Eastern Oregon:							
Lumber and wood products	238	245	263	272	281	286	290
Woodpulp	7	10	15	31	38	41	41
Total	245	255	278	303	319	327	331
Idaho:							
Lumber and wood products	328	345	370	399	397	384	357
Woodpulp	48	57	72	101	115	146	185
Total	376	402	442	500	512	530	542
Montana:							
Lumber and wood products	239	218	215	217	173	180	175
Woodpulp	52	84	116	130	185	192	200
Total	291	302	331	347	358	372	375
Western Oregon:							
Lumber and wood products	1,701	1,345	1,195	1,144	1,175	1,166	1,227
Woodpulp	188	285	400	480	508	518	528
Total	1,889	1,630	1,595	1,624	1,683	1,684	1,755
All C-NP Regions:							
Lumber and wood products	3,499	3,216	3,237	3,202	3,227	3,195	3,124
Woodpulp	839	1,011	1,369	1,770	1,952	2,082	2,174
Total	4,338	4,227	4,606	4,972	5,179	5,277	5,298

Table 36.—Total wood fiber consumption in western Washington portion of the Columbia-North Pacific Region, by subregion and type of consumption, 1965, with projections to the year 2020
(In million cubic feet)

Subregion and type of consumption	1965	1970	1980	1990	2000	2010	2020
Lower Columbia (8):							
Saw logs	154	127	118	104	123	124	102
Veneer logs	47	47	62	67	78	86	90
Miscellaneous wood products	15	16	20	23	23	23	20
Pulpwood	229	242	326	442	475	508	519
Foreign log exports	12	24	29	25	17	10	4
Total	457	456	555	661	716	751	735
Coastal (10):							
Saw logs	70	58	53	48	56	57	47
Veneer logs	18	19	24	27	31	34	35
Miscellaneous wood products	7	8	9	11	11	11	9
Pulpwood	37	39	53	72	77	83	85
Foreign log exports	46	90	110	93	61	38	15
Total	178	214	249	251	236	223	191
Puget Sound (11):							
Saw logs	232	191	178	158	185	188	155
Veneer logs	93	94	122	135	156	171	179
Miscellaneous wood products	22	25	30	36	36	36	31
Pulpwood	241	254	342	464	499	534	546
Foreign log exports	59	117	142	121	80	50	20
Total	647	681	814	914	956	979	931
Western Washington:							
Saw logs	456	376	349	310	364	369	304
Veneer logs	158	160	208	229	265	291	304
Miscellaneous wood products	44	49	59	70	70	70	60
Pulpwood	507	535	721	978	1,051	1,125	1,150
Foreign log exports	117	231	281	239	158	98	39
Total	1,282	1,351	1,618	1,826	1,908	1,953	1,857

Table 37.—Total wood fiber consumption in eastern Washington portion of the Columbia-North Pacific Region, by subregion and type of consumption, 1965, with projections to the year 2020

(In million cubic feet)

Subregion and type of consumption	1965	1970	1980	1990	2000	2010	2020
Clark Fork-Kootenai-Spokane (1):							
Saw logs	27	29	34	36	38	38	39
Veneer logs	—	—	—	—	—	—	—
Miscellaneous wood products	2	2	2	2	2	2	2
Pulpwood	7	8	8	9	9	10	12
Total	36	39	44	47	49	50	53
Upper Columbia (2):							
Saw logs	85	90	108	115	121	119	123
Veneer logs	—	8	10	13	15	18	20
Miscellaneous wood products	7	7	7	7	7	7	7
Pulpwood	3	3	8	11	13	17	20
Foreign log exports	(1)	(1)	(1)	(1)	(1)	(1)	(1)
Total	95	108	133	146	156	161	170
Yakima (3):							
Saw logs	42	44	53	56	60	59	60
Veneer logs	9	15	19	24	28	33	37
Miscellaneous wood products	3	3	3	3	3	3	3
Pulpwood	—	—	—	—	—	—	—
Total	54	62	75	83	91	95	100
Lower Snake (6):							
Saw logs	(1)	(1)	1	1	1	1	1
Veneer logs	—	—	—	—	—	—	—
Miscellaneous wood products	(1)	(1)	(1)	(1)	(1)	(1)	(1)
Pulpwood	—	—	—	—	—	—	—
Total	—	—	1	1	1	1	1
Mid-Columbia (7):							
Saw logs	35	37	45	48	50	49	50
Veneer logs	5	9	12	14	16	19	23
Miscellaneous wood products	3	3	3	3	3	3	3
Pulpwood	27	29	29	30	33	33	38
Total	70	78	89	95	102	104	114
Eastern Washington:							
Saw logs	189	200	241	256	270	266	273
Veneer logs	14	32	41	51	59	70	80
Miscellaneous wood products	15	15	15	15	15	15	15
Pulpwood	37	40	45	50	55	60	70
Foreign log exports	(1)	(1)	(1)	(1)	(1)	(1)	(1)
Total	255	287	342	372	399	411	438

¹ Less than 500,000 cubic feet.

Table 38.—Total wood fiber consumption in the western Oregon portion of the Columbia-North Pacific Region, by subregion and type of consumption, 1965, with projections to the year 2020

(In million cubic feet)

Subregion and type of consumption	1965	1970	1980	1990	2000	2010	2020
Mid-Columbia (7):							
Saw logs	23	16	13	11	10	10	12
Veneer logs	—	—	—	—	—	—	—
Miscellaneous wood products	1	1	1	1	2	2	2
Pulpwood	4	5	7	9	10	10	10
Foreign log exports	—	—	—	—	—	—	—
Total	28	22	21	21	22	22	24
Lower Columbia (8):							
Saw logs	51	37	28	25	24	24	26
Veneer logs	13	11	11	11	12	12	13
Miscellaneous wood products	2	2	3	3	4	4	4
Pulpwood	20	30	42	51	54	55	56
Foreign log exports	—	—	—	—	—	—	—
Total	86	80	84	90	94	95	99
Willamette (9):							
Saw logs	492	350	272	242	230	230	253
Veneer logs	316	269	269	269	302	304	314
Miscellaneous wood products	20	22	26	31	35	35	35
Pulpwood	95	145	203	243	257	262	267
Foreign log exports	8	13	13	13	8	5	4
Total	931	799	783	798	832	836	873
Coastal (10):							
Saw logs	432	307	238	212	202	202	221
Veneer logs	301	256	256	256	286	289	298
Miscellaneous wood products	17	19	22	27	31	31	31
Pulpwood	69	105	148	177	187	191	195
Foreign log exports	25	42	43	43	29	18	14
Total	844	729	707	715	735	731	759
Western Oregon:							
Saw logs	998	710	551	490	466	466	512
Veneer logs	630	536	536	536	600	605	625
Miscellaneous wood products	40	44	52	62	72	72	72
Pulpwood	188	285	400	480	508	518	528
Foreign log exports	33	55	56	56	37	23	18
Total	1,889	1,630	1,595	1,624	1,683	1,684	1,755

Table 39.—Total wood fiber consumption in the eastern Oregon portion of the Columbia-North Pacific Region, by subregion and type of consumption, 1965, with projections to the year 2020

(In million cubic feet)

Subregion and type of consumption	1965	1970	1980	1990	2000	2010	2020
Central Snake (5):							
Saw logs	11	10	10	10	10	10	10
Veneer logs	1	2	3	4	5	5	5
Miscellaneous wood products	(¹)	(¹)	(¹)	(¹)	(¹)	(¹)	(¹)
Pulpwood	—	—	—	—	—	—	—
Total	12	12	13	14	15	15	15
Lower Snake (6):							
Saw logs	37	37	37	37	37	37	37
Veneer logs	8	12	18	22	25	27	28
Miscellaneous wood products	1	1	1	1	1	1	1
Pulpwood	—	—	—	—	—	—	—
Total	46	50	56	60	63	65	66
Mid-Columbia (7):							
Saw logs	137	136	136	136	136	136	136
Veneer logs	12	16	26	30	35	38	40
Miscellaneous wood products	3	3	3	3	3	3	3
Pulpwood	7	10	15	31	38	41	41
Total	159	165	180	200	212	218	220
Oregon Closed Basin (12):							
Saw logs	27	27	27	27	27	27	27
Veneer logs	1	1	2	2	2	2	3
Miscellaneous wood products	(¹)	(¹)	(¹)	(¹)	(¹)	(¹)	(¹)
Pulpwood	—	—	—	—	—	—	—
Total	28	28	29	29	29	29	30
Eastern Oregon:							
Saw logs	212	210	210	210	210	210	210
Veneer logs	22	31	49	58	67	72	76
Miscellaneous wood products	4	4	4	4	4	4	4
Pulpwood	7	10	15	31	38	41	41
Total	245	255	278	303	319	327	331

¹ Less than 500,000 cubic feet.

*Table 40.—Total wood fiber consumption in the Idaho portion of the
Columbia-North Pacific Region, by subregion and type of
consumption, 1965, with projections to the year 2020
(In million cubic feet)*

Subregion and type of consumption	1965	1970	1980	1990	2000	2010	2020
Clark Fork- Kootenai-Spokane (1):							
Saw logs	107	106	111	119	115	107	95
Veneer logs	5	10	13	15	17	19	20
Miscellaneous wood products	5	5	5	5	5	5	5
Pulpwood	—	—	—	—	—	—	—
Total	117	121	129	139	137	131	120
Upper Snake (4):							
Saw logs	7	7	8	8	8	8	7
Veneer logs	—	—	—	—	—	—	—
Miscellaneous wood products	(¹)	(¹)	(¹)	(¹)	(¹)	(¹)	(¹)
Pulpwood	—	—	—	—	12	24	35
Total	7	7	8	8	20	32	42
Central Snake (5):							
Saw logs	48	47	49	53	51	48	43
Veneer logs	4	8	10	11	13	14	15
Miscellaneous wood products	3	3	3	3	3	3	3
Pulpwood	—	—	14	36	37	48	75
Total	55	58	76	103	104	113	136
Lower Snake (6):							
Saw logs	131	130	136	146	141	131	117
Veneer logs	11	22	28	32	37	42	45
Miscellaneous wood products	7	7	7	7	7	7	7
Pulpwood	48	57	58	65	66	74	75
Total	197	216	229	250	251	254	244
Idaho:							
Saw logs	293	290	304	326	315	294	262
Veneer logs	20	40	51	58	67	75	80
Miscellaneous wood products	15	15	15	15	15	15	15
Pulpwood	48	57	72	101	115	146	185
Total	376	402	442	500	512	530	542

¹ Less than 500,000 cubic feet.

*Table 41.—Total wood fiber consumption in western Montana portion of the
Columbia-North Pacific Region, by subregion and type of consumption,
1965, with projections to the year 2020
(In million cubic feet)*

Subregion and type of consumption	1965	1970	1980	1990	2000	2010	2020
Western Montana, Clark Fork- Kootenai-Spokane (1):							
Saw logs	195	171	164	161	109	110	102
Veneer logs	34	37	41	46	54	60	63
Miscellaneous wood products	10	10	10	10	10	10	10
Pulpwood	52	84	107	130	185	192	200
Total	291	302	322	347	358	372	375

Table 42.—Forest industry employment in the Columbia-North Pacific Region, by State and industry group, 1965, with projections to the year 2020¹

(Number of persons)

State and industry group	Standard industrial classification code	1965	1970	1980	1990	2000	2010	2020
Eastern Washington:								
Lumber and wood products	24	7,660	8,375	8,192	7,521	6,988	6,418	6,072
Pulp and paper	26	1,131	1,102	1,039	994	960	933	982
Total		8,791	9,477	9,231	8,515	7,948	7,351	7,054
Eastern Oregon:								
Lumber and wood products	24	8,335	7,606	6,763	6,034	5,512	5,046	4,648
Pulp and paper	26	230	294	366	646	691	661	594
Total		8,565	7,900	7,129	6,680	6,203	5,707	5,242
Western Washington:								
Lumber and wood products	24	39,275	33,707	30,736	27,343	26,261	23,736	22,159
Pulp and paper	26	18,658	17,893	19,539	22,278	20,648	19,430	17,719
Total		57,933	51,600	50,275	49,621	46,909	43,166	39,878
Western Oregon:								
Lumber and wood products	24	62,918	49,782	41,047	35,950	33,836	31,269	30,770
Pulp and paper	26	7,282	9,500	10,526	10,667	9,769	8,780	8,000
Total		70,200	59,282	51,573	46,617	43,605	40,049	38,770
Idaho:								
Lumber and wood products	24	11,515	11,386	10,379	9,569	8,207	7,352	6,629
Pulp and paper	26	870	1,014	1,139	1,439	1,490	1,734	2,028
Total		12,385	12,400	11,518	11,008	9,697	9,086	8,657
Western Montana:								
Lumber and wood products	24	7,615	6,447	7,163	4,996	3,978	3,764	3,538
Pulp and paper	26	300	428	571	619	852	873	866
Total		7,915	6,875	7,734	5,615	4,830	4,637	4,404
Total C-NP Regions:								
Lumber and wood products	24	137,318	117,303	104,280	91,413	84,782	77,585	73,816
Pulp and paper	26	28,471	30,231	33,180	36,643	34,410	32,411	30,189
Total		165,789	147,534	137,460	128,056	119,192	109,996	104,005

¹Data have not been rounded.

*Table 43.—Forest industry employment in western Washington portion of the
Columbia-North Pacific Region, by subregion and industry group, 1965,
with projections to the year 2020¹*
(Number of persons)

Subregion and industry group	Standard industrial classification code	1965	1970	1980	1990	2000	2010	2020
Lower Columbia (8):								
Logging	2411	3,560	3,296	3,080	2,783	2,499	1,958	1,921
Sawmills	2421	3,868	2,678	1,823	1,266	1,229	1,060	767
Veneer, plywood	2432	2,395	2,112	2,178	1,988	1,965	1,882	1,745
All other	24	810	814	814	814	814	814	814
Pulp, paper	26	7,555	7,245	7,911	9,020	8,360	7,867	7,174
Total		18,188	16,145	15,806	15,871	14,867	13,581	12,421
Coastal (10):								
Logging	2411	2,909	2,694	2,517	2,274	2,043	1,601	1,570
Sawmills	2421	1,336	926	630	438	425	366	265
Veneer, plywood	2432	1,515	1,335	1,377	1,257	1,243	1,191	1,103
All other	24	1,367	1,373	1,373	1,373	1,373	1,373	1,373
Pulp, paper	26	1,258	1,206	1,317	1,501	1,392	1,310	1,194
Total		8,385	7,534	7,214	6,843	6,476	5,841	5,505
Puget Sound (11):								
Logging	2411	4,501	4,167	3,895	3,518	3,160	2,476	2,430
Sawmills	2421	6,478	4,485	3,052	2,121	2,058	1,776	1,284
Veneer, plywood	2432	6,142	5,414	5,584	5,098	5,039	4,826	4,474
All other	24	4,394	4,413	4,413	4,413	4,413	4,413	4,413
Pulp, paper	26	9,845	9,442	10,311	11,757	10,896	10,253	9,351
Total		31,360	27,921	27,255	26,907	25,566	23,744	21,952
Western Washington:								
Logging	2411	10,970	10,157	9,492	8,575	7,702	6,035	5,921
Sawmills	2421	11,682	8,089	5,505	3,825	3,712	3,202	2,316
Veneer, plywood	2432	10,052	8,861	9,139	8,343	8,247	7,899	7,322
All other	24	6,571	6,600	6,600	6,600	6,600	6,600	6,600
Pulp, paper	26	18,658	17,893	19,539	22,278	20,648	19,430	17,719
Total		57,933	51,600	50,275	49,621	46,909	43,166	39,878

¹ Data have not been rounded.

Table 44.—Forest industry employment in eastern Washington portion of the Columbia-North Pacific Region, by subregion and industry group, 1965, with projections to the year 2020¹

(Number of persons)

Subregion and industry group	Standard industrial classification code	1965	1970	1980	1990	2000	2010	2020
Clark Fork-Kootenai-Spokane (1):								
Logging	2411	115	124	124	114	107	102	96
Sawmills	2421	950	953	899	776	685	577	513
Veneer, plywood	2432	—	—	—	—	—	—	—
All other	24	615	688	688	688	688	688	688
Pulp, paper	26	450	428	351	298	288	280	295
Total		2,130	2,193	2,062	1,876	1,768	1,647	1,592
Upper Columbia (2):								
Logging	2411	716	770	771	713	670	632	597
Sawmills	2421	2,042	2,049	1,931	1,667	1,472	1,239	1,101
Veneer, plywood	2432	—	226	248	269	274	290	304
All other	24	47	53	53	53	53	53	53
Pulp, paper	26	83	88	83	80	76	75	79
Total		2,888	3,186	3,086	2,782	2,545	2,289	2,134
Yakima (3):								
Logging	2411	402	432	433	400	376	355	335
Sawmills	2421	1,019	1,023	964	832	734	618	550
Veneer, plywood	2432	255	407	447	484	494	522	548
All other	24	123	137	137	137	137	137	137
Pulp, paper	26	168	165	254	310	300	291	306
Total		1,967	2,164	2,235	2,163	2,041	1,923	1,876
Lower Snake (6):								
Logging	2411	21	22	22	21	20	18	17
Sawmills	2421	47	47	44	38	34	28	25
Veneer, plywood	2432	—	—	—	—	—	—	—
All other	24	—	—	—	—	—	—	—
Pulp, paper	26	—	—	—	—	—	—	—
Total		68	69	66	59	54	46	42
Mid-Columbia (7):								
Logging	2411	384	413	414	382	359	339	320
Sawmills	2421	731	733	691	596	527	444	394
Veneer, plywood	2432	173	276	304	329	336	354	372
All other	24	20	22	22	22	22	22	22
Pulp, paper	26	430	421	351	306	296	287	302
Total		1,738	1,865	1,782	1,635	1,540	1,446	1,410
Eastern Washington:								
Logging	2411	1,638	1,761	1,764	1,630	1,532	1,446	1,365
Sawmills	2421	4,789	4,805	4,529	3,909	3,452	2,906	2,583
Veneer, plywood	2432	428	909	999	1,082	1,104	1,166	1,224
All other	24	805	900	900	900	900	900	900
Pulp, paper	26	1,131	1,102	1,039	994	960	933	982
Total		8,791	9,477	9,231	8,515	7,948	7,351	7,054

¹ Data have not been rounded.

*Table 45.—Forest industry employment in western Oregon portion of the
Columbia-North Pacific Region, by subregion and industry group, 1965,
with projections to the year 2020¹*
(Number of persons)

Subregion and industry group	Standard industrial classification code	1965	1970	1980	1990	2000	2010	2020
Mid-Columbia (7):								
Logging	2411	86	75	60	51	44	39	36
Sawmills	2421	406	229	130	88	65	52	51
Veneer, plywood	2432	—	—	—	—	—	—	—
All other	24	93	93	93	93	93	93	93
Pulp, paper	26	—	150	167	170	155	140	126
Total		585	547	450	402	357	324	306
Lower Columbia (8):								
Logging	2411	190	166	133	113	98	86	81
Sawmills	2421	604	343	194	132	97	77	77
Veneer, plywood	2432	418	342	315	287	287	267	266
All other	24	23	23	23	23	23	23	23
Pulp, paper	26	908	1,185	1,313	1,330	1,218	1,095	998
Total		2,143	2,059	1,978	1,885	1,723	1,548	1,445
Willamette (9):								
Logging	2411	5,626	4,906	3,929	3,352	2,888	2,557	2,384
Sawmills	2421	9,443	5,945	3,369	2,285	1,687	1,346	1,332
Veneer, plywood	2432	14,446	11,791	10,850	9,872	9,874	9,216	9,155
All other	24	5,050	5,078	5,078	5,078	5,078	5,078	5,078
Pulp, paper	26	5,379	6,866	7,607	7,709	7,060	6,345	5,782
Total		39,944	34,586	30,833	28,296	26,587	24,542	23,731
Coastal (10):								
Logging	2411	5,847	5,100	4,085	3,484	3,003	2,658	2,479
Sawmills	2421	7,739	4,916	2,785	1,890	1,395	1,113	1,102
Veneer, plywood	2432	11,847	9,669	8,897	8,096	8,098	7,558	7,507
All other	24	1,100	1,106	1,106	1,106	1,106	1,106	1,106
Pulp, paper	26	995	1,299	1,439	1,458	1,336	1,200	1,094
Total		27,528	22,090	18,312	16,034	14,938	13,635	13,288
Western Oregon:								
Logging	2411	11,749	10,247	8,207	7,000	6,033	5,340	4,980
Sawmills	2421	18,192	11,433	6,478	4,395	3,244	2,588	2,562
Veneer, plywood	2432	26,711	21,802	20,062	18,255	18,259	17,041	16,928
All other	24	6,266	6,300	6,300	6,300	6,300	6,300	6,300
Pulp, paper	26	7,282	9,500	10,526	10,667	9,769	8,780	8,000
Total		70,200	59,282	51,573	46,617	43,605	40,049	38,770

¹ Data have not been rounded.

*Table 46.—Forest industry employment in the eastern Oregon portion of the
Columbia-North Pacific Region, by subregion and industry group, 1965,
with projections to the year 2020¹*

(Number of persons)

Subregion and industry group	Standard industrial classification code	1965	1970	1980	1990	2000	2010	2020
Central Snake (5):								
Logging	2411	37	37	36	36	35	33	31
Sawmills	2421	334	281	213	169	140	119	102
Veneer, plywood	2432	163	206	250	238	228	208	190
All other	24	22	20	20	20	20	20	20
Pulp, paper	26	—	—	—	—	—	—	—
Total		556	544	519	463	423	380	343
Lower Snake (6):								
Logging	2411	297	293	290	285	279	268	254
Sawmills	2421	688	578	438	349	288	244	210
Veneer, plywood	2432	231	291	354	337	323	295	269
All other	24	—	—	—	—	—	—	—
Pulp, paper	26	—	—	—	—	—	—	—
Total		1,216	1,162	1,082	971	890	807	733
Mid-Columbia (7):								
Logging	2411	899	887	876	863	843	810	768
Sawmills	2421	2,958	2,484	1,883	1,501	1,240	1,050	903
Veneer, plywood	2432	358	451	548	523	501	458	417
All other	24	1,143	1,051	1,051	1,051	1,051	1,051	1,051
Pulp, paper	26	230	294	366	646	691	661	594
Total		5,588	5,167	4,724	4,584	4,326	4,030	3,733
Oregon Closed Basin (12):								
Logging	2411	82	81	80	79	77	74	70
Sawmills	2421	1,092	917	695	554	458	387	334
Veneer, plywood	2432	—	—	—	—	—	—	—
All other	24	31	29	29	29	29	29	29
Pulp, paper	26	—	—	—	—	—	—	—
Total		1,205	1,027	804	662	564	490	433
Eastern Oregon:								
Logging	2411	1,315	1,298	1,282	1,263	1,234	1,185	1,123
Sawmills	2421	5,072	4,260	3,229	2,573	2,126	1,800	1,549
Veneer, plywood	2432	752	948	1,152	1,098	1,052	961	876
All other	24	1,196	1,100	1,100	1,100	1,100	1,100	1,100
Pulp, paper	26	230	294	366	646	691	661	594
Total		8,565	7,900	7,129	6,680	6,203	5,707	5,242

¹Data have not been rounded.

*Table 47.—Forest industry employment in the Idaho portion of the
Columbia-North Pacific Region, by subregion and industry group,
1965, with projections to the year 2020¹*
(Number of persons)

Subregion and industry group	Standard industrial classification code	1965	1970	1980	1990	2000	2010	2020
Clark Fork- Kootenai-Spokane (1):								
Logging	2411	843	839	818	766	653	604	556
Sawmills	2421	2,434	2,186	1,811	1,582	1,242	993	793
Veneer, plywood	2432	299	571	659	685	708	739	759
All other	24	259	200	200	200	200	200	200
Pulp, paper	26	—	—	—	—	—	—	—
Total		3,835	3,796	3,488	3,233	2,803	2,536	2,308
Upper Snake (4):								
Logging	2411	73	73	71	66	56	52	48
Sawmills	2421	203	182	151	132	104	83	66
Veneer, plywood	2432	34	65	75	78	80	84	86
All other	24	—	—	—	—	—	—	—
Pulp, paper	26	70	86	76	71	227	355	454
Total		380	406	373	347	467	574	654
Central Snake (5):								
Logging	2411	342	340	332	311	265	245	226
Sawmills	2421	1,615	1,450	1,201	1,050	824	658	526
Veneer, plywood	2432	494	944	1,089	1,132	1,169	1,220	1,253
All other	24	33	26	26	26	26	26	26
Pulp, paper	26	—	—	222	513	479	570	822
Total		2,484	2,760	2,870	3,032	2,763	2,719	2,853
Lower Snake (6):								
Logging	2411	1,316	1,309	1,278	1,196	1,020	943	868
Sawmills	2421	3,467	3,114	2,579	2,255	1,769	1,414	1,130
Veneer, plywood	2432	7	13	15	16	17	17	18
All other	24	96	74	74	74	74	74	74
Pulp, paper	26	800	928	841	855	784	809	752
Total		5,686	5,438	4,787	4,396	3,664	3,257	2,842
Idaho:								
Logging	2411	2,574	2,561	2,499	2,339	1,994	1,844	1,698
Sawmills	2421	7,719	6,932	5,742	5,019	3,939	3,148	2,515
Veneer, plywood	2432	834	1,593	1,838	1,911	1,974	2,060	2,116
All other	24	388	300	300	300	300	300	300
Pulp, paper	26	870	1,014	1,139	1,439	1,490	1,734	2,028
Total		12,385	12,400	11,518	11,008	9,697	9,086	8,657

¹Data have not been rounded.

*Table 48.—Forest industry employment in the western Montana portion of the
Columbia-North Pacific Region, by subregion and industry group, 1965,
with projections to the year 2020
(Number of persons)*

Subregion and industry use	Standard industrial classification code	1965	1970	1980	1990	2000	2010	2020
Clark Fork- Kootenai-Spokane (1):								
Logging	2411	1,488	1,425	2,986	1,379	1,236	1,136	1,058
Sawmills	2421	4,740	3,543	2,643	2,051	1,103	937	768
Veneer, plywood	2432	1,296	1,179	1,234	1,266	1,339	1,391	1,412
All other	24	91	300	300	300	300	300	300
Pulp, paper	26	300	428	571	619	852	873	866
Total		7,915	6,875	7,734	5,615	4,830	4,637	4,404

Table 49.—Population, households, gross national product, and disposable personal income in the United States, 1920-62, with projections to the year 2000¹

Year	Population	Households	Persons per household	Gross national product (1961 dollars)	Disposable personal income (1961 dollars)	
					Total	Per capita
	<i>Million persons</i>	<i>Million</i>	<i>Number</i>	<i>Billion dollars</i>	<i>Billion dollars</i>	<i>Dollars</i>
1920	106.5	24.4	4.36	143.0	—	—
1930	123.2	29.9	4.12	190.3	140.6	1,141
1940	132.1	34.9	3.79	268.8	170.2	1,288
1950	152.3	43.0	3.54	366.5	256.7	1,685
1960	180.7	53.0	3.41	511.1	355.7	1,968
1962	186.7	54.7	3.41	546.0	379.0	2,030
1970	208.0	62.5	3.33	710.0	500.0	2,400
1975	223.0	—	—	84.0	—	—
1980	241.0	73.5	3.28	990.0	690.0	2,860
1985	260.0	—	—	1,175.0	—	—
1990	280.0	86.2	3.25	1,380.0	960.0	3,430
2000	325.0	101.0	3.22	1,920.00	1,340.0	4,120

Sources: POPULATION: 1920-40, U.S. Bur. Census, "Historical Statistics of the United States," 1960. 1950-62, "Estimates of the Population of the United States, January 1, 1950, to March 1, 1964."

¹Based on tables 1 and 2, pp. 6 and 8, "Timber Trends in the United States" (U.S.D.A. Forest Service 1965).

Table 50.—Summary of total demand for major timber products in the United States, 1952-62,
with projections to the year 1985

Product	Standard unit of measure	1952	1962	1970	1975	1980	1985
Lumber:							
Total	Million board feet	41,460	37,300	39,700	41,600	43,400	45,500
Per capita	Board feet	263	200	191	187	180	175
Plywood and veneer:							
Softwoods	Million square feet, 3/8-inch basis	—	9,250	14,400	15,600	17,000	18,500
Hardwoods	Million square feet, 3/8-inch basis	—	2,770	3,500	4,200	5,000	5,700
Total		—	12,020	17,900	19,800	22,000	24,200
Per capita	Square feet	—	64	86	89	91	93
Woodpulp:							
Total	Million tons	—	29.5	38.2	44.8	52.4	60.5
Paper and board:							
Total	Million tons	—	42.4	52.7	60.2	69.3	79.2
Per capita	Pounds	—	454	507	540	575	609

Source: "Timber Trends in the United States" (U.S.D.A. Forest Service 1965).

Table 51.—*Summary of consumption, net imports, and domestic production of timber products in the United States, 1952-62, with projections to the year 1985*

Product	Standard unit of measure	1952	1962	1970	1975	1980	1985
Lumber:							
Consumption	Million board feet, International 1/4-inch rule	41,460	37,300	39,700	41,600	43,400	45,500
Net imports	"	1,752	4,130	5,100	5,400	5,800	6,100
Domestic production	"	39,708	33,170	34,600	36,200	37,600	39,400
Domestic roundwood ¹	"	39,480	34,105	35,600	37,200	38,600	40,400
Veneer logs:							
Consumption	"	3,082	6,776	10,300	11,300	12,500	13,900
Net imports ²	"	148	860	1,300	1,600	1,900	2,300
Domestic production	"	2,934	5,916	9,000	9,700	10,600	11,600
Domestic roundwood	"	2,934	5,916	9,000	9,700	10,600	11,600
Pulpwood:							
Consumption ³	Million standard cords	35.4	52.8	67.5	78.0	88.5	99.5
Net imports	"	11.0	10.1	11.0	11.2	11.5	12.2
Domestic production	"	25.0	42.8	56.6	66.8	77.8	87.3
Domestic roundwood	"	23.4	33.8	42.0	50.8	60.0	69.3
Miscellaneous industrial wood:							
Consumption	Million cubic feet	758	505	500	500	500	500
Net imports	"	(4)	(4)	—	—	—	—
Domestic production	"	758	505	500	500	500	500
Domestic roundwood	"	699	466	460	460	460	460
Fuelwood:							
Consumption ⁵	Million standard cords	58.6	26.9	22.0	20.0	18.0	16.5
Net imports	"	(4)	(4)	—	—	—	—
Domestic production	"	58.6	26.9	22.0	20.0	18.0	16.5
Domestic roundwood	"	27.2	15.0	13.2	12.0	10.8	9.8

Source: "Timber Trends in the United States" U.S.D.A. Forest Service 1965).

¹ The difference between domestic production of lumber and domestic roundwood production (saw logs) in 1962 and later years largely reflects the growing practice of converting to pulp chips a portion of the lower grade material in saw logs. The 1952 estimate was based on a special Forest Service survey of log and lumber production.

² Including equivalent log volumes of imported veneer and plywood.

³ Including equivalent log volumes of imported pulp and paper and board, plus plant byproducts.

DEFINITION OF THE COLUMBIA-NORTH PACIFIC REGION

Counties in Subregion for Economic Studies

<u>Subregion name</u>	<u>Idaho</u>	<u>Montana</u>	<u>Oregon</u>	<u>Washington</u>	<u>Wyoming</u>
1. CLARK FORK- KOOTENAI- SPOKANE	Benewah Bonner Boundary Kootenai Shoshone	Deer Lodge Flathead Granite Lake Lincoln Mineral Missoula Powell Ravalli Sanders Silver Bow		Pend Oreille Spokane	
2. UPPER COLUMBIA				Adams Chelan Douglas Ferry Franklin Grant Lincoln Okanogan Stevens	
3. YAKIMA				Benton Kittitas Yakima	
4. UPPER SNAKE	Bannock Bingham Blaine Bonneville Butte Camas Caribou Cassia Clark Fremont Gooding Jefferson Jerome Lincoln Madison Minidoka Power Teton Twin Falls				Teton

<u>Subregion name</u>	<u>Idaho</u>	<u>Montana</u>	<u>Oregon</u>	<u>Washington</u>	<u>Wyoming</u>
5. CENTRAL SNAKE	Ada Adams Boise Canyon Elmore Gem Owyhee Payette Valley Washington		Baker Malheur		
6. LOWER SNAKE	Clearwater Custer Idaho Latah Lemhi Lewis Nez Perce		Union Wallowa	Asotin Garfield Whitman	
7. MID-COLUMBIA			Crook Deschutes Gilliam Grant Hood River Jefferson Morrow Sherman Umatilla Wasco Wheeler	Columbia Klickitat Walla Walla	
8. LOWER COLUMBIA			Columbia	Clark Cowlitz Lewis Skamania Wahkiakum	
9. WILLAMETTE			Benton Clackamas Lane Linn Marion Multnomah Polk Washington Yamhill		

<u>Subregion name</u>	<u>Idaho</u>	<u>Montana</u>	<u>Oregon</u>	<u>Washington</u>	<u>Wyoming</u>
10. COASTAL			Clatsop Coos Curry Douglas Jackson Josephine Lincoln Tillamook	Grays Harbor Pacific	
11. PUGET SOUND				Clallam Island Jefferson King Kitsap Mason Pierce San Juan Skagit Snohomish Thurston Whatcom	
12. OREGON CLOSED BASIN			Harney Lake		

DEFINITION OF TERMS

Commercial forest land.—Forest land which is producing, or is capable of producing, crops of industrial wood and is not withdrawn from timber utilization by statute or administrative regulation. Includes areas suitable for management to grow crops of industrial wood generally capable of producing in excess of 20 cubic feet per acre of annual growth. Includes both accessible and prospectively accessible areas and both operable and prospectively operable areas.

Commercial species.—Tree species presently or prospectively suitable for industrial wood products; excludes so-called weed species such as willow and dogwood.

Cull trees.—Live trees that do not contain at least one merchantable 12-foot saw log, now or prospectively, because of defect, rot, or species (also see “Rotten cull trees”).

Diameter classes.—A classification of trees based on diameter of the tree outside bark, measured at breast height. Two-inch diameter classes, in which the even inch is the approximate midpoint, are used.

Diameter at breast height (d.b.h.).—Diameter of a tree measured at breast height (4-1/2 feet above the ground).

Farm.—A place operated as a unit of 10 or more acres from which sale of agricultural products totals \$50 or more annually, or a place operated as a unit of less than 10 acres from which the sale of agricultural products totaled \$250 or more during the previous year.

Forest industry lands.—Lands owned by companies or individuals operating wood-using plants.

Forest land.—Land at least 10 percent stocked by forest trees of any size, or formerly having such tree cover and not currently developed for nonforest use. Includes chaparral areas in the West and afforested areas. The minimum area for classification of forest land is 1 acre. Roadside, streamside, and shelterbelt strips of timber must have a crown width of at

least 120 feet to qualify as forest land. Unimproved roads and trails, streams, and clearings in forest areas are classed as forest if less than 120 feet in width.

Forest management.—The protection and management of forest lands for the production of timber and related products.

Forest trees.—Woody plants having a well-developed stem and usually more than 12 feet in height, including both growing stock and cull trees.

Forest type.—A classification of forest land based upon the species presently forming a plurality of stocking.

Growing-stock trees.—Live sawtimber trees, poletimber trees, saplings and seedlings meeting specific standards of quality and vigor; excludes cull trees.

Hardwoods.—Dicotyledonous trees, usually broad-leaved and deciduous.

Harvesting.—The cutting and transportation of logs and related forest products to local points of delivery.

Indian lands.—Tribal lands held in fee but administered by the Federal Government and Indian trust allotments.

Land area.—Includes dry land and land temporarily or partially covered by water, such as marshes, swamps, and river flood plains; streams, sloughs, and canals less than one-eighth mile wide; and lakes, reservoirs, and ponds less than 40 acres in area.

Mill residue (plant residue).—Wood materials from primary manufacturing plants that are not used for some product.

Miscellaneous private lands.—Privately owned lands other than forest industry or farmer owned.

Mortality.—The volume of sound wood in live sawtimber and poletimber trees dying from natural causes during a specific period.

National Forest land.—Federal lands which have been designated by Executive Order or statute as National Forests or purchase units, and other lands under the

administration of the Forest Service, including experimental areas and Bankhead-Jones Title III lands.

Net annual growth.—The annual change in volume of sound wood in live sawtimber and poletimber trees resulting from natural causes; i.e., increases in volume in absence of mortality and cutting, minus mortality, plus growth on mortality, and growth on one-half the cut during a specified year.

Net volume.—The gross volume of a tree less deductions for rot, sweep, or other defects affecting use.

Noncommercial forest land.—Unproductive forest land incapable of yielding crops of industrial wood because of adverse site conditions, and productive forest land withdrawn from commercial timber use through statute or administrative regulation.

Nonforest land.—Land that has never supported forests, and lands formerly forested, where use of timber is precluded by development for nonforest use such as crops, improved pasture, residential areas, and city parks. Also includes improved roads and adjoining rights-of-way, power-line clearings, and certain areas of water classified by the Bureau of Census as land. In forested areas, unimproved roads, streams, canals, and nonforest strips must be more than 120 feet wide and clearings in forest areas must be more than 1 acre in size to qualify as nonforest land.

Nonstocked area.—Commercial forest land less than 10 percent stocked with growing-stock trees.

Ownership.—The property owned by one owner, regardless of the number of parcels that may comprise it, in a specific area such as a State or the United States as a whole.

Other public lands.—Federal lands administered by the Bureau of Land Management, Bureau of Indian Affairs, and miscellaneous Federal agencies; and lands owned by States, counties, and local public agencies, or lands leased by these governmental units for more than 50 years. National Forests are excluded.

Poletimber trees.—Live trees 5.0 to 10.9 inches in diameter at breast height.

Productive-reserved forest land.—Productive public forest land withdrawn from timber utilization through statute or administrative regulation.

Projected demand.—The estimated quantity of a roundwood product, or products, that would be demanded at specified times in the future under explicit assumptions as to (1) the growth of the population and national products, (2) trends in the use of materials, and (3) trends in prices of timber products relative to substitute materials.

Projected employment.—The estimated volume of employment that would be associated with meeting projected demands for a timber product or products at specified times in the future under explicit assumptions as to (1) changes in productivity, i.e., output per employee, and (2) changes in secondary manufacturing activities.

Roundwood (roundwood products).—Logs, bolts, or other round sections cut from trees.

Rotten cull trees.—Live trees of commercial species that do not contain at least one minimum saw log, now or prospectively, primarily because of rot.

Rough trees (sound cull trees).—Live trees, 5.0 inches or larger in diameter at breast height, that do not contain at least one minimum saw log, now or prospectively, and have less than 25 percent of their volume in usable form primarily because of roughness, poor form, or non-commercial species.

Salvable dead trees.—Standing or down dead trees, that are considered currently or potentially merchantable by regional standards.

Saplings.—Live trees of commercial species 1.0 to 5.0 inches in diameter at breast height and of good form and vigor.

Saw log.—A log meeting minimum approved log-grade specifications, or for species for which approved log grades are lacking; at least 12 feet long if conifer or 8 feet long if hardwood, with a minimum d.i.b. of 6 inches, and with deduction for defect no greater than two-thirds the gross volume.

Sawtimber stands.—Stands at least 10 percent stocked with growing-stock trees, with half or more of this stocking in sawtimber and poletimber trees and with sawtimber at least equal to poletimber stocking.

Sawtimber trees.—Live trees containing at least one minimum saw log. Softwoods must be at least 9.0 inches in diameter at breast height, except in California, Oregon, Washington, and coastal Alaska where the minimum diameter is 11.0 inches. Hardwoods must be at least 11.0 inches in diameter in all States.

Seedlings.—Established live trees of commercial species less than 1.0 inch in diameter at breast height and of good form and vigor.

Softwoods.—Coniferous trees, usually evergreen, having needles or scalelike leaves.

Stand-size class.—A classification of forest land based on the predominant size of timber present; that is, sawtimber, poletimber, or saplings and seedlings.

State, county, and municipal lands.—Lands owned by States, counties, and local public agencies, or lands leased by these government units for 50 years or more.

Standard Industrial Classification (SIC).—A classification of establishments by type of activity in which engaged. An “establishment” is an economic unit which produces goods or services.

Stocking.—A measure of the degree which area is occupied or utilized by trees of specified classes, including (1) all live trees, (2) growing-stock trees, and (3) desirable trees. Classification of forest land and forest types is based on stocking of all live trees. Stocking of growing-stock trees is used to determine stand size and age class.

Stocking standards.—The minimum number of well-spaced trees required to fully utilize the area by specified forest types and sites.

Timber cut from sawtimber.—The net board-foot volume of live sawtimber trees cut for forest products during a specified period, including both roundwood products and logging residues.

Timber products.—Roundwood products and byproducts of primary wood manufacturing plants. Includes saw logs, veneer logs and bolts, cooperage logs and bolts, pulpwood, fuelwood, piling, poles, posts, hewn ties, mine timbers, and other round, split, or hewn products.

Timber products industries.—Industries included in Major Group 24, Lumber and Wood Products, Except Furniture, and Major Group 26, Paper and Allied Products, described in the Standard Industrial Classification Manual. The major industries are:

Logging.—Logging camps and logging contractors primarily engaged in cutting timber and in producing rough, round primary forest or wood raw materials.

Sawmills and planing mills.—Establishments primarily engaged in sawing rough lumber and timber from logs and bolts, or resawing cants and flitches into lumber, including box lumber, and softwood cut stock; planing mills combined with sawmills; and separately operated planing mills which are engaged primarily in producing surfaced lumber and standard workings or patterns lumber.

Veneer and plywood plants.—Establishments primarily engaged in producing commercial veneer, either face or technical, and those primarily engaged in manufacturing commercial plywood, including nonwood backed or faced veneer and nonwood faced plywood, from veneer produced in the same establishment or from purchased veneer.

Paper and allied products.—Establishments primarily engaged in the manufacturing of pulps from wood and other cellulose fibers and rags; the manufacture of paper and paperboard; and the manufacture of paper and paperboard into converted products such as paper coated off the paper machine, paper bags, paper boxes, and envelopes.

Miscellaneous wood manufacturing.—

Employment reported for several other SIC divisions within Major Group 24 were combined as miscellaneous wood manufacturing. The group includes hardwood dimension mills, shingle mills, millwork plants, prefabricated structures, wooden containers, and wood preserving. Industries in this group are either secondary manufacturers or they process a small amount of the total log harvest. They employ a relatively small proportion of the total number of workers.

Wood is consumed by firms in Major Group 25, Furniture and Fixtures, but these industries were not studied because the quantities of wood processed, often in combination with other materials, and number of workers employed in the Pacific Northwest are small.

Unproductive forest land.—Forest land incapable of yielding crops of industrial wood because of adverse site conditions. Includes sterile or poorly drained forest land, subalpine forests, and steep rocky areas where topographic conditions are likely to prevent management for timber production.

Volume of growing stock.—The cubic-foot volume of sound wood in the bole of noncull sawtimber and poletimber trees of commercial species from a 1-foot stump to a minimum 4.0-inch top outside bark or to the point where the central stem breaks into limbs.

Volume of sawtimber.—Net volume of the saw-log portion of live sawtimber trees in board feet.

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Errata

Wall, Brian R.

1969. Projected developments of the timber economy of the Columbia-North Pacific Region. U.S.D.A. Forest Service Res. Pap. PNW-84, 87 pp. Pacific Northwest Forest and Range Experiment Station.

The following tables should be changed to reflect a correction in projected logging employment for the year 1980 in western Montana.

New Data

Table 13, page 31

	(Year 1980) (No. of persons)
Subregion 1 -- Lumber and wood products	10,811
Subregion 1 -- Total	11,733
Total C-NP Region: Lumber and wood products	102,729
Total C-NP Region: Total	135,909

Table 14, page 32

	(Year 1980) (No. of persons)
Subregion 1 -- Montana	5,612
Subregion 1 -- Total	10,811
State Total -- Montana	5,612
Grand Total	102,729

Table 17, page 35

	(Year 1980) (Thousand dollars)
Subregion 1	82,207
Total	781,151

Table 42, page 71

	(Year 1980) (No. of persons)
Western Montana: Lumber and wood products	5,612
Western Montana: Total	6,183
Total C-NP Regions: Lumber and wood products	102,729
Total C-NP Regions: Total	135,909

Table 48, page 77

	(Year 1980) (No. of persons)
Subregion 1, Logging	1,435
Subregion 1, Total	6,183

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CURRENT SERIAL RECORDS

Wall, Brian R.

1969. Projected developments of the timber economy of the Columbia-North Pacific Region. U.S.D.A. Forest Service Res. Pap. PNW-84, 87 pp. Pacific Northwest Forest & Range Experiment Station, Portland, Oregon.

This report examines the present forest resource and forest industry in the Columbia-North Pacific Region of Washington, Oregon, Idaho, western Montana, and Teton County, Wyoming. Projections of the future timber economy have been made for industry and subregions to the year 2020. The mix of forest industries is projected to change, resulting in decreasing wood consumption by the lumber industry and increasing wood consumption by the veneer, plywood, and pulp and paper industries. Forest industrial employment will decline as worker productivity increases. Payrolls in the forest industries are projected to increase, reflecting gains in productivity and the continuing demands for skilled labor.

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Headquarters for the PACIFIC NORTHWEST FOREST AND RANGE EXPERIMENT STATION is in Portland, Oregon. The Station's mission is to provide the scientific knowledge, technology, and alternatives for management, use, and protection of forest, range, and related environments for present and future generations. The area of research encompasses Alaska, Washington, and Oregon, with some projects including California, Hawaii, the Western States, or the Nation. Project headquarters are at:

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